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THERAPEUTIC PROBLEMS IN WATER BALANCE FROM THE VIEWPOINT OF THE SURGEON*

URBAN MAES, M. D.†
AND
HARRY A. DAVIS, M. D.†
NEW ORLEANS

Our purpose in this paper is to discuss certain paradoxical problems of water metabolism which frequently confront the surgeon, and not to discuss the general physiology of this subject. Such problems in water balance often demand therapeutic consideration more urgently than does the underlying surgical condition. Fundamentally, disturbances in water balance may be divided into two groups: (1) Alterations of the content of body water; (2) alterations of the distribution of body water. Let us consider each of these separately.

ALTERATIONS OF THE CONTENT OF BODY WATER

The amount of water which the organism can retain is dependent directly upon the electrolyte content of that organism. The water-binding power of different electrolytes varies but is possessed to the highest degree by the base, sodium. Sodium is present in relatively higher concentrations in the blood and interstitial fluids than in the intracellular fluid. Dehydration may result, therefore, from an insufficient intake of water, from an excessive loss of water, and, finally, from the decreased ability of the organism to retain water due to electrolyte loss, particularly sodium. From a surgical viewpoint, the loss of water and of electrolytes usually occurs simultaneously. Thus, water and electrolyte depletion occurs as a result of vomiting, diarrhea, duodenal fistula, jejunostomy, ileostomy, and prolonged intubation with the Wangensteen or Miller-Abbott tube. The effects of loss of water and of loss of electrolytes may be distinguished from each other. Loss of water leads to dehydration, which is characterized by dryness of the skin and mucous membranes, softening of the eyeballs, hemoconcentration, increase in the blood non-protein nitrogen and sugar, increase in the carbon dioxide content of the blood and, finally, a lowered output of urine. Loss of electrolytes leads to a diminished ability of the body to hold water, and therefore a secondary dehydration results. If, however, water alone is administered in the presence of electrolyte loss, a more characteristic syndrome appears: cramps in the muscles, particularly of the legs, muscular fatigue, nausea and vomiting (McCance[1]).

Thus we come to the paradoxical problem of the dehydrated patient who is unable to retain either water or electrolytes. The usual history here is that of prolonged diarrhea and repeated vomiting or of profusely draining duodenal or jejunal fistula which has been treated with electrolyte-free water by mouth or by vein. The patient presents the appearance of severe dehydration with hemoconcentration. Blood examination reveals a definite acidosis with reduction of the blood sodium level and decreased carbon dioxide combining power. The administration of either isotonic glucose or sodium chloride solution by vein results in a profuse diuresis which equals or even, upon occa-

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†From the Department of Surgery, Louisiana State University School of Medicine, New Orleans, Louisiana.

sion, exceeds the amount of solution which was administered. What has happened in this instance? The continued loss of sodium base has resulted in secondary dehydration which has been inadequately treated with water alone. Eventually, replacement by water combined with sodium loss has led to a state of hypotonicity of the body fluids. Owing to the diminution in the total amount of base, the body is unable to retain water. The administration of isotonic sodium chloride solution (0.85 per cent) results in diuresis, because this isotonic solution behaves as a hypertonic solution with respect to the body fluids. Water is withdrawn from the interstitial tissue spaces and diuresis occurs. This explains the paradox of the dehydrated organism which cannot hold either water or electrolytes. A similar phenomenon has been produced in dogs (Davis and Dragstedt[2]) and in man (McCance[1]). The treatment is simple. Isotonic sodium chloride solution should be given in combination with desoxycorticosterone acetate (D. O. C. A.), which will cause a retention of the sodium chloride in the tissues, thereby aiding the body to replenish its electrolyte and water stores.

Another problem is presented when the administration of water causes a loss of body electrolytes. Intubation of the stomach or small intestine with the Wangensteen or Miller-Abbott tube is a procedure which is often used in surgical patients. As a result, chloride ions, sodium ions, or both, are removed from the body. Electrolyte replacement by vein may be adequate. If such a patient is given water by mouth an additional source of electrolyte loss is added. When water passes into the intestine, sodium chloride enters the water from the intestinal blood vessels so that a final concentration of 250 mg. to 590 mg. per cent may be reached (Goldschmidt and Dayton[3]). The continued removal of this additional amount of sodium chloride may eventually result in considerable losses. This additional source of electrolyte loss must be taken into consideration when replacement by vein is undertaken.

Another aspect of the general therapeutic problem is presented by water intoxication. Much has been written regarding this subject and most workers seem to have confused water intoxication with water-logging of the tissues. In the original description, water intoxication (Larson et al.[4]) was induced by administering electrolyte-free water and was cured by intravenous hypertonic sodium chloride solution. Subsequent work has demonstrated that the syndrome of water intoxication is due to an excessive dilution of the electrolytes of the body with resultant disturbances of the osmotic relationships of the tissues. In our experience, it has been rare to encounter an instance of death from water intoxication in surgical practice. We have observed suggestive symptoms in patients with diabetes mellitus and acidosis due to surgical complications who have been given large amounts of isotonic glucose solution. One such patient received 10,000 c. c. of 5 per cent glucose solution during the 48 hours preceding death. On the other hand, the persistent treatment of patients suffering from electrolyte loss of varied origin with fluid containing no electrolytes may produce minor degrees of water intoxication. The earliest prodromal symptoms of intoxication which we have noted in these individuals have been cramping sensations in the muscles, particularly of the legs, feelings of epigastric fullness and nausea. The remedy is obvious. Those instances of water intoxication which have been reported in the literature have been examples of water-logging of the tissues due to the administration of excessive amounts of isotonic sodium chloride solution.

Vitamin deficiencies present another problem to the surgeon in relation to fluid balance. Such states occur when a reduction of the intake of food is enforced by the presence of an obstruction of the esophagus. They may result also from voluntary reduction of the dietary due to pain produced by a gastric ulcer or carcinoma. A frequent cause of voluntary reduction of food intake is painful and difficult defecation resulting from benign stricture of the rectum. Such patients frequently present the picture of

emaciation, nutritional hypoproteinemia, dehydration and multiple vitamin deficiencies. One of these vitamins, thiamin hydrochloride (B_1), is of particular interest to the surgeon, since its deficiency may lead to acute circulatory failure (Weiss and Wilkins[5]). This vitamin is excreted in the urine, and the administration of intravenous fluids will accelerate the loss of the vitamin from the body. In this way, a borderline case of avitaminosis B_1 may be converted into a definite avitaminosis. Not infrequently, we have noted that these patients, after receiving intravenous fluids for several days, will commence to complain of loss of appetite with numbness and tingling sensations in the extremities. These statements confirm the observations of Cowgill et al.[6] regarding the effect of fluid administration upon vitamin B_1 loss in the urine in lower animals. In such instances thiamin may be given with the fluid in amounts of 20 mg. daily.

GENERALIZED ALTERATIONS OF THE DISTRIBUTION OF BODY WATER

Water is distributed in the body in three large areas, the intravascular, the interstitial, and the intracellular. The normal flow of water into and out of these locations is promoted by the interaction of the osmotic pressure of the blood and body fluids and the hydrostatic pressure of the blood (Starling,[7] Govaerts[8]). Fluctuations in the distribution of the body water affect first the interstitial area, which may be called the "buffer" area, since it has to bear the brunt of sudden withdrawals of fluid from, or of sudden excess of fluid in, the blood. Alterations of the fluid content of the interstitial area have but little physiologic effect upon the organism. On the other hand, the body is extremely sensitive to alterations in the water content of the blood. Thus, dehydration exerts its effects mainly through its interference with the functions of the blood. Alterations in the fluid content of the intracellular spaces are the last to occur, and then only to release water to the body when the necessity is great. An increase in the fluid content of the intracellular area may result from changes in the permeability of the cell membranes, such as occur in various toxic states. These will not be discussed at this time. From a surgical viewpoint, alterations in body water distribution are due chiefly to a diminution in the osmotic pressure of the blood.

This leads us directly to the problem of surgical edema, in which the water distribution is altered in such a way that the fluid volume content of the interstitial tissue spaces is increased. Excluding such factors as affect the circulation in the blood and lymph vascular system, the cause of surgical edema can be narrowed down to hypoproteinemia which lowers the osmotic pressure of the blood. Briefly, hypoproteinemia may result from: (1) deficient intake of proteins due to obstructive lesions of the alimentary canal; (2) deficient absorption of protein in spite of normal intake, due to ulcerative lesions of the absorptive area of the intestinal tract or to diarrhea; (3) deficient formation of proteins by the liver, due to intrinsic disease of the liver, such as portal cirrhosis, neoplasms, and subacute yellow atrophy. The presence of suppurative lesions in the body will interfere with protein regeneration by the liver: (4) protein loss, in the form of repeated hemorrhage, prolonged suppuration, removal of protein in ascitic and pleural fluids; and (5) dehydration.

The fact that dehydration, if allowed to persist, will cause a breakdown of the plasma proteins is often not recognized. The water of metabolism which is produced during this protein disintegration is utilized by the dehydrated organism. In this way, another paradoxical phenomenon confronts the surgeon; namely, edema co-existent with, or resulting from, dehydration. Such patients fall into two groups. In the first group are those who present dehydration and established edema, and in whom hypoproteinemia is due not to dehydration but rather to one of the other causes already listed. Examination of the blood reveals a lowering of the plasma protein level. In the second group the patient presents only the evidences of severe dehydration. Edema is

not present and blood examination reveals a normal or even elevated plasma protein level. The usual treatment at this point is the intravenous administration of glucose or saline solutions which cause the prompt appearance of edema. Examination of the blood will now reveal the true state of the plasma proteins which are found to be diminished in amount. In our experience, the edema which follows the administration of isotonic salt solution in these individuals is more persistent than that resulting from isotonic glucose solution. If it be remembered that every dehydrated patient is a potential candidate for edema, fewer of these patients will be rendered edematous as a result of the administration of fluids. The crux of the problem is clear. Both groups of patients should be treated not for dehydration alone, but also for hypoproteinemia, apparent or latent. Transfusions of blood, plasma, serum or ascitic fluid will be found efficacious (Maes and Davis[9]).

The disturbance of water distribution in hypoproteinemic states generally manifests itself in the form of edema of the lower extremities. This, however, is merely the local expression of a widespread increase in the volume of the interstitial tissue fluid. Thus, edema of the retroperitoneal tissues and of the walls of the gastrointestinal tract is often present. A more serious complication, however, is pulmonary edema, which may appear suddenly. In our experience, it has occurred most frequently as a complication of hypoproteinemia associated with generalized carcinomatosis.

There is another form of edema which is not associated with any apparent alterations of the plasma proteins or blood chlorides. This may be seen when excessive quantities of isotonic sodium chloride solution are administered. In many hospitals such solutions are not strictly isotonic (0.85 per cent) but may be 0.9 per cent or even 1.0 per cent. This difference in tonicity is significant when large quantities of fluid are given. This type of "salt" edema may be very persistent and affects not only the subcutaneous tissues but also the retroperitoneal tissues and the walls of the gastrointestinal tract. Edema of the gastrointestinal tract will lead to gastric retention and to extreme constipation which may be mistaken for a paralytic ileus. The walls of the intestinal tract are not only edematous but also markedly distended.

LOCAL ALTERATIONS OF THE DISTRIBUTION OF BODY WATER

Before ending this discussion it might be pertinent to consider the problem presented by those surgical states in which a certain intolerance to fluids exists. In shock due to trauma or to burns there is established an area of increased permeability of the capillaries of variable extent at the site of injury. Through these highly permeable capillaries, plasma flows freely into the interstitial tissue spaces. The administration of fluids lacking proteins, such as glucose or saline solutions, will have only a temporarily beneficial effect. The increase in blood flow associated with the administration of such solutions will result in an accelerated outflow of plasma through the permeable capillaries into the area of trauma. The occurrence of this phenomenon has been observed in experimental shock (Beard and Blalock,[10] Davis[11]). This problem may be solved by the utilization of such fluids as blood and plasma.

Finally, a peculiar but little recognized problem is presented by that group of surgical conditions in which a mechanical segregation of blood occurs. At some point in the venous system a mechanical obstruction develops which impedes the venous return. Since the arterial flow continues, a large amount of the circulating blood becomes impounded in the capillaries and venules of the affected area. The effects will depend upon the rapidity of establishment of a collateral venous circulation. If this can be developed, as in obstruction of the femoral vein, no systemic circulatory effects are noted. In certain sites, the reestablishment of a collateral venous circulation is anatomically impossible. The administration of glucose or saline solutions under these conditions will accelerate the loss of blood into the area of segregation by

increasing the rate of blood flow. Such solutions, lacking protein, cannot adequately replace the blood which they have helped to remove from the circulation. The clinical importance of the recognition of this phenomenon in relation to the problem of therapeusis has already been stressed (Davis[12]). In what surgical conditions does mechanical segregation of blood occur? In intestinal obstruction associated with strangulation, particularly that resulting from volvulus and from thrombosis of the mesenteric veins, the phenomenon is present. The re-establishment of a collateral venous circulation is an anatomic impossibility in such areas. In hemopericardium with obstruction to the venous return to the heart, an analogous situation exists. The deleterious effect of intravenous glucose or saline solutions has been demonstrated in dogs in which the portal vein has been occluded. The infused animals died more rapidly than the untreated animals (Davis[11]).

From these statements, it is apparent that in the maintenance of the blood volume under such circumstances reliance should be placed only upon such fluids as blood.

SUMMARY

A brief review has been presented of some problems in the therapeusis of disturbances of fluid balance from the viewpoint of the general surgeon.

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DISCUSSION

Dr. Alton Ochsner (New Orleans): I would just like to say a word about a point which Dr. Davis brought up concerning the possibility of removing electrolytes from a patient with duodenal drainage and who is allowed to drink water. This point was emphasized by Dr. Peters of Yale in a presentation before the American Surgical Association. He showed that under such conditions large amounts of chlorides would be removed from the stomach. This can be obviated by allowing the patient to drink normal saline solution instead of water. We have been able to demonstrate to our satisfaction that patients may be given normal saline to drink, and drink as much they care to, without producing any hypochloremia.

Dr. Allan Eustis (New Orleans): I wish to refer to the remarks made by Dr. Davis concerning thiamin deficiency and interstitial edema of the heart muscles. Recently I had a case of chronic appendicitis; had been dieting practically on milk and crackers for three months. He was persuaded to have his appendix removed and two days later his heart went all to pieces. Electrocardiogram showed evidence of myocardial disease. We gave thiamin chloride, 3,000 units daily. In four days electrocardiogram was normal. If thiamin were given in all surgical cases it might be a good thing.

Dr. L. C. Chamberlain (New Orleans): I think now that we are pretty well satisfied with the fact that thiamin deficiency is responsible for muscle fatigue. It is recognized now that you must have a sufficient amount of vitamin B_1 and vitamin C in sufficient quantities to activate glucose so that it can take care of muscle fatigue. I think where you get in trouble is where patients die on the table or in cases such as Dr. Eustis mentioned. The moral is to have sufficient B_1 and C present to prevent muscle fatigue.

SYMPOSIUM ON INFLUENZA*

ETIOLOGY OF INFLUENZA

A REVIEW

GEORGE W. McCOY, M. D.
NEW ORLEANS

A review is a satisfactory presentation for the speaker because it makes no demand for originality, and even more important, he does not need to defend what is presented. I will try to review for you briefly the history of, and some of the accomplishments in, recent studies of influenza. My study has been neither complete nor profound but I believe covers the essentials of the subject. If what I bring serves to clarify for you as it has for me, a rather involved subject, I shall be more than repaid for the time and effort I have spent on this review.

In the study of almost any influenza problem, one is confronted with the fact that there exist no final criteria that will justify the diagnosis in an individual case, without reference to a prevailing epidemic.

As Mote[1] expresses it "epidemic influenza is a type of respiratory tract symptom complex; that it is an epidemiologic phenomenon and not a specific etiologic entity."

The same authority[2] lists 26 important epidemics from 1510 to 1918—an average of about 16 years between.

The origins of epidemics of influenza are hard clearly to ascertain and harder to get agreement among various authorities as to the source of any particular outbreak. The epidemic of 1918 is a case in point. I was in Boston when what we then believed were the very first cases in that outbreak in the United States appeared among Navy personnel and I thought I saw it spread across the continent to San Francisco where I met it six or eight weeks later. When more data were available there was evidence to indicate that an infection that could not be distinguished on any grounds from that of the Boston cases had occurred in some other localities even earlier.

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THE PFEIFFER BACILLUS

The first micro-organism to be seriously considered as the cause of influenza was the Pfeiffer bacillus and to show how well established this organism was thought to be I want to quote from a leading authority[3] of that day, "Pfeiffer finally, in 1892, described the bacillus which is at present definitely recognized as the etiological factor of influenza." A great physiologist is reported to have remarked that the life of a physiologic fact was three years; I would venture to remark that many bacteriologic "facts" are more hardy but in the end equally mortal. Pfeiffer's bacillus (now *Hemophilus influenzae*) did not long withstand the searching investigations that grew out of the epidemic of 1918. The reasons for failure to survive need not detain us. This organism remains in good standing as a cause of meningitis.

Of the many research projects in which I have been engaged, none gave more surprising and disappointing results than certain experiments carried out in the autumn of 1918 in connection with the influenza then prevailing in this country. A joint board of medical officers of the Navy and Public Health Service was organized to endeavor to throw some light on the cause of the epidemic. The Board was divided into two groups, one working in Boston, the other in San Francisco. Professor M. J. Rosenau was head of the former and he had associated with him two exceptionally able Public Health Service officers, the late Joseph Goldberger, whose researches on typhus and pellagra had already given him a well merited reputation; the other was that ace of experts on infectious diseases, James P. Leake. At San Francisco, I was put in charge and had with me, De Wayne Ritchey of the Navy Department. It was agreed at preliminary conferences in Washington that our work would be on human subjects as we felt that it was a waste of time to use laboratory animals, as these had given consistently negative results. The Navy authorities assured us that at both sides of the continent we would find volunteers among Navy personnel and the

Navy made good on this 100 per cent. It was decided that we would first endeavor to determine whether the causative agent of influenza, which we assumed would be found in the upper respiratory tract of patients in the early stages of the infection, would pass through a bacteria proof filter. Suitable donors were available and in short order the materials for the test were prepared and the nose and throat of each volunteer were sprayed with throat washings from active cases of influenza, filtered as well as without filtration. The unfiltered material was used as a positive control since all of us had no doubt that it would contain the active infecting agent. To our surprise none of the volunteers developed influenza. A few cases of streptococcic sore throat, clinically readily distinguished from influenza, were produced but we failed to bring about a condition that any of us was willing to call influenza. This was a most surprising result—one for which none of us was prepared. The summary of the work at San Francisco is presented here.

SUMMARY OF SAN FRANCISCO STUDIES

"Thirteen volunteers received the filtrate of nasopharyngeal secretions into their upper respiratory passages, while 13 were given the unfiltered secretions after a similar fashion. Ten men were used as contact controls. Some of a filtrate was inoculated into the conjunctival sacs of two, and injected subcutaneously into a third. Whole blood was administered under the skin of one individual.

"Four men were given a pooled suspension of eight living strains of *B. influenzae* into their nasopharynges and four were given the filtrate of the same suspension.

"Care was taken to control every step, and it is to be regretted that the time interval between donors and volunteers, which varied from two to six hours, could not, under the circumstances, be shortened.

"Control cultures of the unfiltered secretions yielded a high percentage of *B. influenzae*, hemolytic streptococci, pneumococci, and Gram-negative diplococci. Cultures of the filtrates were invariably sterile.

"In no instance was a clinical case of influenza produced.

"Three of the volunteers who received unfiltered nasopharyngeal secretions became ill with acute lacunar tonsillitis."[4]

Not ony were these experiments substantially negative but also a considerable number of attempts to infect man by other workers and groups, as related by Mote[5] gave somewhat similar results.

By common consent, rather than by any convincing evidence, we assume that influenza, the common cold, and perhaps other infections of the upper respiratory tract are conveyed by droplets of secretions expelled by sneezing or coughing and related activities or by objects contaminated by these secretions, such as food and drink and utensils used in eating and drinking.

Many observers have suspected that influenza in man might originate in infection from animals. According to Mote[6] it was believed by some in 1918 that swine influenza had a relation to the human disease. This swine infection has been shown to be due primarily to a virus, but that for the full flowering of the pathogenicity this agent must be associated with a hemophilic bacterium called *Hemophilus influenzae suis*.

INFLUENZAL PNEUMONIA

This seems to be an appropriate place to say the little that needs to be said on the etiology of influenzal pneumonia, the complication that furnishes the bulk of the deaths. It usually is stated that it is due to pathogenic bacteria chiefly streptococci, pneumococci and Pfeiffer's bacilli acting as secondary invaders. My confidence in this view was greatly shaken early in the 1918 influenza epidemic when I saw many cases come to autopsy which failed to show the ordinary gross findings of either bronchopneumonia or of the lobar type. As an upshot of doubt on this point the Public Health Service engaged Professor LeCount of Chicago to conduct a series of autopsies with the special point in mind

of determining whether the influenzal pneumonia differed appreciably in gross pathology from that prevailing at other times. In due time, LeCount[7] reported on about 200 autopsies. He noted among other things the "bloody fluid in subpleural lymph spaces", "the opaque reddish brown places", and that influenzal pneumonia "differs from bronchopneumonia in its predilection for the periphery of the lungs and extent to which the inflammation is hemorrhagic." LeCount's findings led him to declare that "It is difficult to believe that a disease with so many distinctive features and affording, as it has, so much of novelty in pathologic anatomy can fail to possess a corresponding definite etiology."

VIRUS STUDIES

Smith, Andrewes and Laidlaw,[8] on the basis of immunization tests, concluded that swine influenza and human influenza viruses studied were immunologically related but not identical. A whole new field was opened by these workers who, in 1933, carried out their studies at the National Institute for Medical Research in England using the ferret as the experimental animal. The ferret, at that time, an unusual laboratory animal, was doubtless chosen because it had been employed with very fruitful results by a related group of workers in the study of canine distemper. They were able to infect this rodent with human influenza of the type then prevailing in Great Britain. It might be an open question as to whether they were dealing with epidemic or endemic disease. Be that as it may, this infection, after adaptation to the ferret, was transmissable to mice.

The influenza virus can be adapted to mice by previous passage through a series of ferrets but even then must be passed through a series of mice before the lesions become readily recognizable and pathogenicity fully developed. This work, and the mass of data flowing from the original study, seems to show that human influenza is due to a filtrable virus.

Andrewes, Laidlaw and Smith[9] recovered the specific virus from epidemic influenza but not from common cold or sporadic influenza.

Horsfall[10] reviews the influenza problem up to November 1940. He concurs with most workers that a virus has caused many epidemics of influenza in recent years but insists that "there is equally good evidence that this virus has not caused all epidemics of the disease during the same period."

Horsfall even questions whether the virus discovered by Smith, Andrewes and Laidlaw is the most important or most frequent cause of influenza. Those directly concerned in the problem now designate the virus described originally by the British workers mentioned as influenza virus A, and propose succeeding letters of the alphabet for other viruses if (or when) they are established.

The workers who agreed on this nomenclature which was announced at Detroit on October 10, 1940, did not have long to wait before adding the second virus in the series. In the November 1, 1940 issue of Science, p. 405, Thomas Francis[11] of the Rockefeller Foundation, announced the discovery of influenza virus "B". In 1936 Francis had isolated from influenza cases a virus that did not correspond to the original "A". Early in 1940, he isolated a virus from influenza in North Carolina and later in the same year a strain was isolated from cases at Irvington on the Hudson (New York State). Through immunologic methods these strains of virus gave evidence of identity, but as mentioned before were different from virus "B".

Horsfall and Lennette[12] found immunologic differences in viruses isolated in 1933 and 1934 when compared with those isolated in 1939.

Even among different strains of "A" virus there are antigenic differences and Horsfall[13] doubts that a strain of virus "A" will completely immunize a person against another strain of "A". He also states that "at least 95 per cent of human beings have demonstrable antibodies." These antibodies are increased temporarily by an attack of influenza.

A not very surprising finding has been that a high proportion of contacts of influenza cases developed subclinical infections as demonstrated by the increase of antibodies. Dr. Horsfall regards these inapparent infections probably of more importance in spreading the disease than cases of fully developed clinical influenza.

Two very remarkable facts emphasized by Mote[14] are: (1) "the extreme pneumotrophic character of the virus" and (2) that the disease can be established only by the respiratory route.

Not only has influenza virus been conveyed to laboratory animals but it has been cultivated in tissue culture and in the chick embryo.

A disconcerting finding from the point of view of laboratory workers was that certain stock animals were found to present evidence of previous, apparently natural infection with influenza virus.

A most remarkable development according to an editorial[15] has been the discovery of a vaccine made from a combination of influenza virus and canine distemper virus that immunized ferrets against three immunologically different strains of influenza virus.

The investigators, Horsfall, and Lennette[16] tested the vaccine on human volunteers with the result that it produced an increase of influenza neutralizing antibodies, but so far as I know, up to the present the vaccine has not been put to what we might call a field test—exposure of vaccinated persons to epidemic influenza. The same workers[17] showed that there was no antigenic relation between canine distemper virus and human influenza virus.

Laidlaw, Smith, Andrewes, and Dunkin,[18] were able to produce in the horse an influenza virus antiserum that had a modest degree of effectiveness in mice. They expressed caution in suggesting therapeutic value in man.

So recently as February 8, 1941, it was announced[19] that the Surgeon General of the Army had appointed a board for the investigation of influenza and other epidemic diseases in the army—an illustration of how important the military medical authorities consider the subject.

Up to the present, the determination of the etiologically related virus cannot be employed in a practicable fashion in making a diagnosis in an individual case, or indeed of the type of a prevailing epidemic unless one has better facilities than most communities furnish.

The measures that have been taken in trying to curb influenza have failed to throw light on etiology in the strict sense, or on the mode of transmission. Vaccines against alleged etiologically related organisms, masks and other means have failed to show any benefit. I have seen a health officer very enthused over a vaccine, and another even more enthused over the use of masks, but a little study showed that in each case the preventive measures were taken about the fifth week of the epidemic. In small cities it is at this time that the disease reaches its height and the number of cases rapidly falls thereafter.

CONCLUSION

When one views the accomplishments of recent years he is impressed with the extent and variety of the studies and the suggestive findings, but he will be even more impressed by the lack of any data that will be helpful to the clinician or to the Health officer, but we can take satisfaction that some of the rubbish of misinformation has been cleared away.

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OTORHINOLARYNGOLOGIC ASPECTS OF INFLUENZA

HAROLD LESLIE KEARNEY, M. D.
NEW ORLEANS

The most important thing in the world to Cyrano de Bergerac was his nose. This enormous bulbous nose defeated him in love and its ridicule more than once led him into mortal combat. Today, since the nose is the open door to influenza our noses still lead us into mortal combat.

According to Gay the earliest account of an influenza epidemic has been recorded in the classical writing of Livy in 412 B. C. The first pandemic began in Sicily in 1510. Since then pandemics have occurred at intervals varying from two to 170 years.

Influenza is undoubtedly spread by human agencies but may also be transmitted from man to animals or vice versa. Transmission experiments, which have shown that influenza-like disease can be transmitted by instillation of infected nasopharyngeal secretion into the respiratory tract of a susceptible host, indicate the existence of the virus in the respiratory tract of the infected individual. The disease is therefore generally believed to be transmitted by droplet infection or by direct contact. Accordingly the disease is transmitted more rapidly in crowded centers and is spread more rapidly by modern methods of transportation. Likewise, increasing density of world population and speedier transportation have resulted in increased frequency of pandemics.

During the epidemic of 1918 to 1920 workers in chlorine, iodine and sulphur dioxide plants apparently had a high degree of immunity. This led to the chlorine treatment of colds, which, however, had short vogue. Its apparent success was probably due to the production of a defensive exudate rather than to any bactericidal action.

Influenza is like a fuse touching off the fatal powder keg of serious infections resulting from secondary invaders. In itself, influenza causes little or no mortality. Death comes from its complications.

Prevention is attempted by isolation and quarantine of patients during the early stages, as the most infective period is probably during the early clinical manifestations of the disease. The wearing of gauze masks for protection and avoidance of crowds are desirable.

EAR COMPLICATIONS

A rather unusual, but when present, the most nearly pathognomonic manifestation of the disease, is otitis externa hemorrhagica. According to Politzer, this condition commences with moderate pain, tinnitus and slight deafness and is commonly seen during influenza. Examination of the ear shows one or more dark blue, elongated, hemorrhagic blebs in the cutaneous lining of the osseous external auditory meatus. These vesicles have thin walls and may rupture from the touch of a cotton applicator. They should be opened with a sharp paracentesis knife and the canal dusted with a little boric acid powder. The condition may be associated with acute purulent otitis media in which event the membrana tympani should also be opened.

An aural condition which I have rarely observed, but which I believe to be generally associated with influenza, is an intact, black ear drum. The ear drum itself is probably not affected but appears to be black because one sees through it, the purplish appearance of the ecchymotic mucosa of the middle ear. These conditions appear suddenly, are associated with impairment

of hearing and generally resolve over a period of weeks.

As the cause of acute purulent otitis media and its complications, influenza ranks close to the worst offender, measles. The pathology here is the result of secondary invaders such as *Streptococcus hemolyticus*, staphylococci and pneumococci, for which the soil has been prepared, and fertilized so to speak, by the devitalizing systemic and local effects of the virus of influenza.

The toxemia of influenza may affect the internal ear and produce nerve deafness.

The nose is generally regarded as the portal of entry for influenzal infection. Coryza is generally one of the earliest manifestations of influenza but may occasionally be entirely absent. St. Clair Thomson believes anosmia to be a very frequent sequela of influenza.

SINUS COMPLICATIONS

Paranasal sinus infection is common after influenza but infection here is probably never due to the actual agent of the disease, but to secondary invaders. Sinus infections occurring during epidemics of influenza seem particularly severe and more likely to lead to chronic sinus infection than like infections incurred during non-epidemic years. This increased activity may be due to lowering of the general vitality due to influenza, or it may be that the virulence of the secondary invaders is enhanced in association with influenza.

The treatment of sinus infection following influenza is no different from that used in other sinus infections of respiratory origin. As pointed out by Furstenberg, emphasis should be placed on the conservative, non-surgical treatment of all acute sinus infections. Surgical disturbance of acute sinus infection may cause dangerous spread of the infection and may favor the development of chronic sinus disease. If the condition does not resolve under conservative non-surgical treatment, it can be more safely treated surgically when it has reached the subacute stage.

NASOPHARYNGEAL AND LARYNGEAL COMPLICATIONS

The nasopharyngeal and pharyngeal appearance in influenza is generally that of the familiar "grippal throat." The nasopharynx is red and there is a red streak extending down into the pharynx behind each posterior faucial pillar. The duration and severity of the dysphagia is often out of all proportion to the local appearance of trouble, the sore throat sometimes lasting for weeks. At times the pain in the throat is undoubtedly due to myalgia or neuritis. Acute tonsillitis may occur during influenza, but pharyngitis is more typical.

Acute laryngitis and laryngotracheitis are common complications of influenza. In the recent epidemic some of these cases have been unusually severe.

Paralysis of the tensors of the cords may be a complication of influenza, as may also be adductor paralysis of one or both cords.

CONCLUSION

And now a tribute to the boys in the back room. In the words of Winston Churchill, "never in the world have so many owed so much to so few." He referred to the Royal Air Force. I refer to the laboratory workers in medicine. A widespread and disabling epidemic of influenza in a country at war could change the history of the world. We have reason to believe that work now in progress, on the production of immunity to influenza may materially lessen the mortality and morbidity from this scourge of mankind.

THE TREATMENT OF INFLUENZA

OSCAR W. BETHEA, M. D.
AND
RALPH G. GREENLEE, M. D.
NEW ORLEANS

It is well to acknowledge in the beginning that we have no satisfactory prophylactic or specific therapy and that in both fields our efforts are largely empirical.

PROPHYLAXIS

In prophylaxis, the avoidance of exposure to the disease is the first consideration. Especially in periods of epidemic, the individual may benefit by not visiting the

sick and by staying away from gatherings. The isolation of patients is of major importance, particularly during the early period of the disease when infectivity is strongest[1]. In the home, the patient should be placed in charge of nurses or one or more members of the household assigned to the care of the case. Even then it is well to give the patient a bell and for the attendant to come in only when needed and not remain longer than necessary. The wearing of masks by nurses has been largely discontinued, but the patient should always be instructed as to the importance of properly covering the face when coughing or sneezing. This is one of the few diseases in which an excellent state of health does not seem to insure any appreciable immunity. Measures for building up resistance have been advocated through the generations but their value is still problematical. This refers particularly to outdoor exercise, cold baths, and other so-called "hardening" processes.

At one time vitamins were enthusiastically advocated, especially vitamin A, and this product received the synonym of the anti-infective vitamin. It is highly probable that a vitamin deficiency may render one more susceptible to the disease, but it is not thought today that any excess of vitamins above the normal will lessen susceptibility. The value of vaccines is still a moot question. Reimann[2] quotes the work of English investigators suggesting that the specific immune bodies in the blood are increased even to some extent against the influenza viruses slightly different serologically from the strain used in the antigen. Diehl[3] feels that both the stocks and autogenous products have some value. Cecil[4] has stated that they apparently have a degree of efficiency not only in preventing infection, but especially in reducing the incidence of complications such as pneumonia, resulting from the secondary invasion of bacteria. Our own experience agrees with that of Cecil. Many state frankly the opinion that they have no value[5]. Among the arguments used against vaccines are: that influenza is a virus disease and bacterial vaccines, therefore, do not convey a direct immunity, and that the period of immunity even from the disease is comparatively short and somewhat imperfect.

The prophylactic use of serums has received much attention. They are especially recommended in the presence of an oncoming epidemic[6]. Shope[7] has found that the virus of influenza can be neutralized by the serums of about half of all adults, and Francis[8] has called attention to the persistence of immunity conferred by an attack of influenza and believes that it will influence the degree of severity of future infection.

GENERAL MANAGEMENT

In therapy proper, rest in bed seems to be the only measure that meets with universal acceptance as having a definite influence on the course of the disease. LeBlanc and Wellborn,[9] in a carefully controlled series, found that it favorably influenced both the duration of the disease and the incidence of complications. Walker[5] feels that it not only benefits the patient directly but that the incident isolation lessens the spread of the disease and reduces the chance of the patient's acquiring other infections. Bed rest should continue well into convalescence, the duration depending upon the severity of the process and the length of the febrile period. Three days of normal temperature has been suggested for a minimum requirement[1]. Others have advocated that the patient remain in bed after permanent normal has been reached for a period half as long as the period of the preceding fever.

The patient should be kept comfortably warm and in a quiet but cheerful environment, entirely free from domestic care and business responsibilities. Reading should be prohibited during the febrile period and reduced to a minimum during convalescence. There is an old saying that "He who reads with influenza spends the next six months with the ophthalmologist." The room should be sufficiently ventilated, yet exposure to drafts or chilling carefully

avoided. Some have advocated that the air be not only warm, but moist[1], the moisture to be provided by a vessel of hot water or by any other convenient means. We have never tried this plan.

As the respiratory tract is irritated, smoking would seem inadvisable[5]. We have a clue here of the protective processes of nature, as most patients are robbed of all desire for smoking during the disease. A daily sponge bath is almost universally employed. We do not approve of the alcohol sponge so often advocated. In protracted illness, alcohol may be applied to the contact surfaces where it is used to lessen perspiration and harden the skin. We would not wish this effect on the body as a whole. Alkaline mouth washes and gargles are often recommended, but, as alkalies tend to lessen the secretion of the salivary glands they would seem to be contraindicated. If a mouth wash is used, some acid preparation such as liquor antisepticus (N.F.) would seem to be best.

DRUG THERAPY

The time-honored initial purgative is falling into disrepute. Alvarez[10] has found that it delays favorable progress. Our own opinion is that it is distinctly contraindicated. "The patient may be kept awake when he should be sleeping; exposed to cold when he should be warm and protected; disturbed when he should be at rest, and his vital resources depleted when they should be conserved."[11] Should there be any special indication a mild laxative may be administered in the early morning.

As previously stated, we have no specific therapy. A multitude of agents have been suggested as having more or less value. Glazer[12] expresses the common opinion when he says "The duration of pyrexia and hospitalization in influenza seems to be almost self limited and influenced little if any by therapy." Walker[5] remarks that "Treatment consists mainly of relief of symptoms." Competent clinicians have divided their cases into groups, applying various therapeutic measures and carefully observing the results. No appreciable influence on the course of the disease has been demonstrated in these controlled studies.

Belladonna (and atropine) have been recommended. The concensus is that they are contraindicated. Recently a number of patients were treated with merthiolate sprays and excellent results reported, but another group tried this on a fairly large series, using one-half of their clinical material as controls. The conclusion was that it had no value as a therapeutic measure[9].

Quinine has been used for influenza as for most other ills. No specific value has been demonstrated and against its use is the argument that it tends to congest the auditory apparatus, contributing to middle or internal ear complications.

Most of the coal tar antipyretics have had their advocates. No specific value has been demonstrated and it is highly probable that if these are continued after the development of pneumonia, they may contribute to an unfavorable outcome.

Diehl[3] has presented interesting data on the use of codeine and papaverine and this plan of therapy is still being followed by many. Codeine alone or with acetylsalicylic acid is the main reliance in the control of pain and may have some favorable influence on the nasal congestion. Acetylsalicylic acid probably has no value in influencing the progress of the disease but it can do much towards relieving discomfort. We advocate small doses (5 gr.) repeated when necessary for discomfort and promptly discontinued upon the first evidence suggesting pneumonia. It is best administered in fruit juice. When given with an alkali, such as sodium bicarbonate, chemical dissociation takes place and the patient really gets salicylic acid and sodium acetate. Alkalinization is favored by many and there is much clinical datum in its favor. This form of treatment has been extensively exploited by patent medicine manufacturers and much misinformation is being broadcast over the radio networks.

The sulfonamides have been used extensively. The consensus is that sulfanilamide has no influence especially upon the virus

stage of the disease.[13] Sulfathiazole seems to offer more promise, but its status has not yet been established. The percentage of unfavorable reactions would seem to contraindicate its routine employment.

PERSONAL EXPERIENCES

We wish to offer, for what it may be worth our experience with our last 168 influenza patients at the Southern Baptist Hospital in New Orleans. These were all student nurses. It is the rule of the institution that a nurse is either on full duty or is a regular hospital patient. We had an opportunity, therefore, to follow these patients under exceptional advantages. This study covers five epidemics, during each of which there were about 25 to 35 cases; it also includes some sporadic cases that occurred at other times. The series probably embraces some cases of common cold, though we made every effort to exclude these as far as possible. The nurses are instructed to report to their superiors on the first appearance of symptoms, and their cooperation in this has been almost perfect. They are immediately put to bed in the institution and given the benefit of the full plan of treatment, and are kept in bed until they have had a minimum of one full day of normal temperature. In severe cases the period of rest is naturally prolonged. They are then sent to the nurses' home and do not return to duty until the following day. They are not assigned to night duty for at least a week and during that time they are not permitted to go out at night. The following order is entered on their charts: "Rest in bed; no company; diet as ordered; sodium bicarbonate 1 gram, sodium citrate 2 grams, every two hours when awake; acetylsalicylic acid 0.3 gram, when needed for discomfort; codeine sulfate 0.03 gram, is added if there is much pain." If there is any sore throat, 5 per cent solution of silver nitrate is applied once daily. Should there be sufficient rhinitis to interfere with comfortable breathing, a glucose solution of ephedrine is instilled into the nares once or twice a day. Usually, if used at all, this is employed only at night to induce respiration sufficiently normal to permit sleep. A laxative or enema is used only if there is constipation or other definite indication.

The patients are instructed not to blow the nose with violence, so as to lessen the tendency to sinusitis or otitis media. They are instructed to cover the face properly when coughing or sneezing.

The alkalies are administered in seltzer water or dry ginger ale.

Unless contraindicated, the patient is given a liquid diet when the temperature is under 100° F. Water and fruit juices are given freely.

An analysis of these 168 cases indicates an average duration of fever of 1.94 days; average hospitalization, 3.49 days; the longest period of hospitalization was 11 days. There was one relapse, the patient reentering the hospital after having been discharged. There was no proved pneumonia. Two patients showed high temperature, pulmonary congestion and other suggestive findings. These were given sulfathiazole and came to normal within twelve hours and, except for slight secondary elevations, remained normal. X-ray evidence was negative. The highest temperature was 104.6° F. (40.3C.); the mean temperature 100.6°F. (38.1 C.).

This plan of treatment is not presented as having proved specific value. The series is too small to justify our drawing definite conclusions, but we have felt that our results have been fairly satisfactory.

CONCLUSIONS

Influenza is largely a self-limited disease and there is no specific for either prophylaxis or treatment.

Rest and other measures of general care are still the mainstay of therapy.

Various remedial agents have been advocated, but they have not met the test of clinical experience.

A study of 168 hospital cases treated by a uniform plan is presented for consideration.

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DISCUSSION

Dr. H. L. Kearney (New Orleans): I would like to ask Dr. McCoy how the Public Health Service has managed to make such accurate predictions of influenza epidemics the past two years. They predicted an epidemic for last year and a larger epidemic for this year and our local experience has borne out the accuracy of these predictions.

Dr. L. C. Chamberlain (New Orleans): I just want to make a statement of an observation I made two years ago, which might interest Dr. McCoy and any dog lover. Everybody knows that I am a dog lover. I have lots of good dogs. My yard, apparently, was supposed to be infected with the distemper virus. I vaccinated those dogs that I have in the yard, year after year, without much result. Two years ago about this time of the year, just about the time that the camphor leaves began to fall, I noticed they accumulated in clumps in front of the kennels. A little later I went there one day and happened to brush some camphor leaves away from the front of the kennels and found three very large moist honeycombed spots, and through this dark moist mud was a sort of spawn; looked like spawn of mushroom, was alive with fleas, I decided then that the fleas were coming up out of the moist soil and bringing up, out of there either the virus that they had carried back with them or this virus was something that grew in the soil, and the infected fleas coming out of this place were infecting my dogs. I dug up the soil and for about ten feet in front of the kennels put concrete and I have not had any trouble since. I believe the infection was in that soil and the fleas were the carriers.

Dr. McCoy (New Orleans): In answer to Dr. Kearney's question, I would say that, so far as I know, such predictions are based on past experience; especially the observation that scattered small epidemics of influenza, or influenza-like outbreaks, are likely to precede a major epidemic, sometimes by considerable time.

In respect to an epidemic predicted for the relatively near future, that I suspect is based on outbreaks of influenza, or a similar condition, somewhat widespread, that have occurred during the past winter, together with the often repeated observation that an extensive outbreak of influenza often occurs during and after a war.

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THE MANAGEMENT OF FACIAL INJURIES*

NEAL OWENS, M. D.†
AND
RICHARD W. VINCENT, M. D.‡
NEW ORLEANS

The majority of facial injuries resulting in distortion and dysfunction are produced as a result of accidental trauma. A relatively small number of types of accidents account for these and foremost among these are: Automobile accidents, falls, burns, explosions, gunshot wounds and injuries resulting from aircraft.

An analysis of defects resulting from these accidents shows that there are certain injuries which are peculiar to the specific type of accident encountered. Automobile accidents notoriously produce lacerated wounds, fractures and burns, whereas falls more commonly result in fractures and contused wounds. Burns, because of their specific mode of injury, produce large surface defects as a result of skin destruction. Large surface defects resulting from burns most frequently show dysfunction as a sequel because of contracture from the resulting scar. Explosions and gunshot wounds almost conformably result in lacerations and contused wounds in association with burns. Examination of gunshot wounds frequently reveals a complete loss of soft parts and bone. Injuries to the face from

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†From the Division of Plastic Surgery, Department of Surgery, School of Medicine, Tulane University, New Orleans, Louisiana, Charity Hospital of Louisiana at New Orleans,

‡From the Department of Plastic Surgery, Eye, Ear, Nose & Throat Hospital, New Orleans, Louisiana.

aeroplane accidents almost uniformly result in contused wounds, fractures and burns and because of the protection afforded the head by the aviator's helmet, a specific injury is commonly seen. As a result of the excellent protection afforded the aviator by his helmet these burns usually involve the tissues of the face from the brow down to the chin and extend backward to a point just anterior to the ear. Because of the specific area burned the most frequent complications noted are ectropia from injuries to the eyelids, atresia of the nostrils and distortion of the mouth.

Defects following accidental trauma must be considered as immediate or late. An accurate diagnosis is essential to correct repair in either group. This is of particular importance in caring for injuries in the very early stage while the wound is still to be regarded as contaminated, for irreparable complications follow acute wounds which are improperly treated. One should develop a systematic examination aimed at accurate diagnosis of all disturbed anatomy. This procedure can be developed with an established routine of examination in a manner so that all pertinent information regarding these changes may be determined accurately and in a surprisingly short length of time. If one palpates the bony prominences which form the orbital rim, palpating the two sides simultaneously for comparison, gross changes in bony anatomy should be determined with a fair degree of accuracy. It is highly important that these be diagnosed and corrected immediately, otherwise distressing complications follow.

An undiagnosed fracture involving the supra-orbital rim, which is permitted to go uncorrected, will usually heal in a mal-aligned position giving not only defects of contour but also chronic frontal sinusitis. Defects along the inferior margin of the orbital rim involving the floor of the orbit will frequently result in displacement of the floor producing diplopia. If this type of fracture is corrected immediately no further complication need follow; however, if this same displacement of the floor is permitted to go uncorrected permanent diplopia may follow. The correction of this is most difficult and frequently involves a rather formidable surgical procedure designed to build up the floor of the orbit by means of a cartilage implant. When once diplopia is established for any great length of time and bony fragments have healed in a displaced position these defects are extremely difficult to overcome and the usual result obtained will fall short of complete satisfaction.

FRACTURES OF THE NASAL BONES

Fractures of the nasal bones require a thorough examination. One can frequently determine by palpation and applied pressure the existence of a nasal fracture, which may otherwise be overlooked by an x-ray examination. It is a reasonable assumption to regard any blow which is sufficient to fracture and displace a nasal bone as one which would transmit a direct force to the septal cartilage. Too frequently this impact to the septal cartilage is sufficient to fracture or dislocate it from its upright position and thereby alter its relation with the vomer. If this fact is appreciated sufficiently to prompt a thorough examination of each vestibule, one will discover in a fair number of cases that the cartilage of the septum is found to occupy an oblique position in one or the other vestibules. It is obvious, therefore, that the correction of a nasal fracture should include the realignment of the septum as well as the bony framework of the nose in those cases where there has been a concomitant injury to the septum. The routine which is being used so frequently of regarding nasal fractures as simple displacements which can be corrected by the application of any type of forceps at hand, is fraught with serious possibilities. Because nasal bones are delicate and of a fibrous nature it is important that their displaced fragments be approximated accurately, otherwise the bony framework will heal in a mal-aligned position which will be reflected in the contour of the soft parts. This correction can best be carried out by special forceps designed specifically for this purpose. Forceps of

this type are designed in pairs, since it is necessary to simulate the normal anatomic curvature of either side with its respective forceps. When using forceps made in this fashion the respective nasal bone may be grasped firmly and gently and adjusted with a minimum amount of trauma. The proper type of forceps for adjusting the septal cartilage should be designed with broad, flat blades, which do not oppose on complete closure. This permits gentle manipulation of the septal cartilage without permitting too much pressure on the mucosa and underlying cartilage. If a fracture or dislocation of the septal cartilage has occurred along with a fracture of the nasal bones, it is imperative that correction of the mal-aligned septum should follow, otherwise healing will occur with the cartilage in a displaced position. If a dislocated septum heals in an uncorrected position sufficient blockage of the airways may result subsequently to produce a chronic sinusitis. This complication may require a submucous resection for its correction.

FRACTURES OF OTHER FACIAL BONES

Fractures of other bones of the face are important since they may result in an alteration of contour or dysfunction. A depressed fracture of the malar bone which goes unrecognized not infrequently results in a defect of that side of the face which produces marked asymmetry. If the fracture is sufficiently severe it is not uncommon to note a disturbance in normal drainage of the antrum which may be sufficient to produce chronic sinusitis. Correction of this defect, immediately following the accident or before healing occurs, may be satisfactorily accomplished with relatively little difficulty. If permanent healing occurs then correction is obtained through the compromise of remolding contour with a suitable tissue transplant, usually cartilage. Refracture of a defect of this sort would entail the performance of a hazardous procedure which would certainly subject the patient to an unjustifiable risk. The same is true with fractures involving the zygomatic arch. An examination to determine the existence of one of the two last mentioned fractures can be quickly and accurately made by palpating the surface of these bones. During this examination any notable depression may be determined. If the fracture is massive or comminuted one can frequently elicit bony crepitation. Variations in contour, when comparing one side with the other, may be elicited unless sufficient time has passed to permit the development of too much edema.

Occasionally one encounters an extensive fracture involving the entire upper jaw, where the upper maxilla is completely separated. The bone may or may not be displaced. By gently grasping the front teeth or alveolar ridge, with three fingers, one can apply sufficient pressure downward and laterally to determine the presence of such an extensive fracture. We have seen a diagnosis made of an extensive fracture of the upper jaw by this process which was overlooked following an x-ray examination. It is obvious that a fracture of this sort should be recognized immediately in order that complete correction be effected. Otherwise a displacement which would probably follow a fracture of this type would completely alter the facial contour of the individual and permanently produce mal-occlusion of the teeth. This latter defect would in all probability interfere with the normal open bite. Early diagnosis is imperative in order that correct reduction follow. A variety of methods may be required in the maintenance of proper position following satisfactory reduction of these defects. They are always individual problems which must be worked out in each instance to conform to the requirements of each specific case.

Fractures of the mandible are equally important and may be quickly and accurately diagnosed by means of pressure applied to the teeth and body of the mandible. If the jaw is firmly grasped in the middle and a downward pressure is made in a gentle fashion one may determine when limitation of motion exists. Further examination may lead either to the established diagnosis of a dislocation or a fracture of

Fig. 1A. Photograph showing extensive lacerated, contused wound of the face. Note the forehead flap which results from the undermining of the skin and soft tissues, extending from the temporal region to the midline of the forehead. Also note the numerous lacerations over the nose involving skin and cartilage.

one or both condyloid processes with or without displacement. One may further ascertain from this maneuver whether there is crepitation or abnormal motion on one or both sides. Applied pressure along the horizontal ramus of the mandible frequently serves to give information relative

Fig. 1B. Photograph showing primary healing following a simple debridement which consisted of thorough cleansing with warm water, white bar soap and sterile cotton.

Fig. 1C. Lateral view showing healing by primary union.

to a fracture at this site and in some instances diagnosis of a fracture of the perpendicular ramus is made. Fractures and dislocations of the mandible should be diagnosed early and reduction should follow immediately, otherwise mal-occlusion of the teeth may result. These commonly heal with a partial fixation of the jaw which may be associated with a definite limitation of the open bite. Correction of the last mentioned defect entails a formidable operative procedure, as in some instances it is necessary to sever completely the mandible through the perpendicular ramus in order that correction may follow.

PLAN OF REPAIR

In order that a plan of repair of facial defects be formulated it is essential that an accurate diagnosis be made. This should take into consideration not only the injury which has resulted from a given lacerated or contused wound but also an accurate estimate of any tissue loss. This information is necessary in formulating a plan of repair as well as in making a prognosis. The location of a wound may serve to modify a given procedure. A lacerated wound associated with the complete loss of a small amount of tissue may be found in an area where there is considerable amount of loose tissue along with an unusual amount of skin relaxation. Here a satisfactory closure may

be accomplished by direct approximation of the wound margins. The same wound found in an area where there is less relaxation of the skin may require the shifting of a pedicle transplant in order to effect closure without tension or disturbance of blood supply. If one encounters the same wound over an area where there is practically no surplus skin, repair may require a skin graft of suitable type.

It is, of course, axiomatic that complete coverage of all surface defects is a basic requirement in obtaining primary healing with a minimum amount of scar. Unless this is accomplished at the time of primary repair a given loss of skin and subcutaneous tissue will result in a defect which must heal by secondary intention. This, of course, results in prolonged healing which is associated with varying amounts of infection. Complete coverage of all surface defects is imperative in wounds where bone has been exposed, otherwise osteomyelitis may follow. Bone may be exposed at the site of a compound fracture and yet if an adequate debridement is done this wound may be satisfactorily closed and healing by primary union will follow. If there has been a skin loss over exposed bone the defect should be covered by a half-thickness skin graft or pedicle skin transplant. One should always aim to effect healing in this type of wound by primary union and in so doing prolonged infection and osteomyelitis with more bone loss is obviated. It is frequently advisable to graft such an area in order to obtain primary healing, even though one knows at the time that subsequent repair will be necessary if satisfactory cosmetic results are to be obtained. The difference between this type of repair and one which results in healing by granulation is usually a matter of months and frequently is the difference between a satisfactory end result and a result which must be accepted as an unsightly compromise.

One frequently sees extensive wounds over the face where considerable loss of soft tissue has occurred. In planning a program of repair one is frequently tempted to seek closure which will give a satisfactory cosmetic result despite the abnormal tension which is produced. These wounds are frequently in association with defects which extend through the entire thickness of the cheek and involve the buccal mucosa. Where there has been a considerable loss of tissue associated with a massive wound one should always constrain the desire to approach satisfactory cosmetic closure at the time of primary repair in the event that too much skin tension is evident. Blair and Brown have pointed out the importance of this and have advocated the wisdom of approximating skin margins with the corresponding margins of buccal mucosa, even though this gives an unsightly defect in the cheek at time of primary repair. To accept this fundamentally sound principle of primary closure frequently results in saving considerable soft tissue and bone. The problem of reconstruction, as a result of this applied principle, is frequently diminished and the time of hospitalization and amount of suffering proportionately decreased. It is far better to have a patient endure an unsightly defect for a relatively short length of time, in order to conserve tissue which might otherwise be lost, than to approximate a successful closure which is subsequently lost because of excessive tension.

The solution of the problem of surgical repair may be trying where one finds a considerable portion of tissue lost or a part, which has been almost completely severed; one may see an entire nose detached except for a small pedicle attached at one or the other lateral borders. The immediate problem is whether one should attempt to save the part in question or assume that the remaining blood supply is inadequate and forfeit the part by extirpation. Even though these remnant pedicle attachments are exceedingly small one should never assume that their potential blood supply is inadequate. A thorough debridement by gentle cleansing with soap and water should follow and subsequently all borders should be approximated in a meticulous fashion with minimal trauma. Frequently one will be amazed to find that these parts have

been saved as a result of careful treatment. Certainly little is to be lost in making this effort.

GENERAL TREATMENT

The treatment of facial wounds is modified by a number of factors. One must primarily consider the general condition of the patient and modify all treatment accordingly. Another factor which modifies repair is the interval which has developed between the time of accident and the time of treatment. A patient seen immediately following an accident, where the time interval has been eight hours or less, presents for treatment a wound which must be considered as contaminated. Treatment here is actually more direct and less complicated than that afforded a wound which has already become infected. These wounds may be satisfactorily converted from a contaminated state into a surgically sterile one, if properly debrided, and healing here should result in primary union with a minimal amount of scar. Wounds which have existed in a contaminated state for longer than eight hours should be considered infected and must be treated over a prolonged period of time in order to aid nature in overcoming infection. The time interval here is always prolonged and healing proceeds by secondary intention, a process which invariably ends with the formation of excessive scar. Treatment of late facial injuries is commonly the treatment of complications which have resulted from healed wounds, where there has been considerable loss of tissue or excessive production of scar from infection. Scar of this sort frequently causes unsightly defects or dysfunction.

Primary consideration should always be directed towards the general condition of the patient. An examination made to determine whether or not the patient is in the state of shock or whether shock is apparently imminent should be made immediately. If evidence is obtained which indicates that the patient is in shock or which suggests that shock is imminent then all effort should be directed toward the treatment of this condition. The wound should be a secondary consideration until this danger is overcome. One exception to this, however, should be the splinting of any existing fracture in order to avoid further shock from movement of the parts. Shock resulting from trauma should be treated by the usual method: Relief of pain by opiates, the application of heat, the administration of infusions of glucose and saline, along with transfusions of whole blood and the administration of any indi-

Fig. 2A. Saddleback defect of nose following trauma with subsequent infection and loss of cartilage.

Fig. 2B. Photograph following restoration of the nasal bridge by a cartilage implant.

cated stimulation. One should not lose sight of the importance of protecting the patient against invasion of organisms producing tetanus and gas gangrene. Whereas it has been repeatedly shown that the best treatment for either tetanus or gas gangrene lies in prevention, Ogilvie points out that prevention is best accomplished with the combination of specific prophylaxis along with an early excision of the wound.

LOCAL TREATMENT

If the general condition of the patient is satisfactory and there has been no evidence of shock or appreciable hemorrhage one may safely proceed with the local treatment of the wound. The ultimate aim in a recent wound is primary healing with a minimal amount of scar and lost function, in association with the best possible cosmetic result. It has been repeatedly shown by Koch, Mason and numerous other workers that satisfactory primary healing in a contaminated wound may be obtained but that primary healing is conditioned on the basis of a satisfactory debridement. Necessary fulfillment of the requirements for converting a contaminated wound into a surgically sterile one is the careful extirpation of all non-viable and severely traumatized tissue. It is axiomatic that the number of bacteria present over the surface of a given contaminated wound is relatively small during the contaminated stage or for the first six to eight hours. These bacteria are present on the surface of the contaminated wound and they actually show contact rather than actual invasion. During this period of time one can, by cleansing the surface of the wound in a manner so gentle that no trauma is inflicted to the wound, remove bacteria mechanically. A satisfactory debridement consists of gentle but thorough cleansing of the parts with sterile cotton, non-irritating white bar soap and luke warm water. In following this procedure one can effectively cleanse the wound and convert it into a surgically sterile one as effectively as by any other method. Other methods directed towards the same end which imply the use of greater force frequently impart too much trauma to the wound. The use of irritating antiseptics is to be avoided, since they impart considerable trauma to a wound through chemical irritation. Also there is still considerable controversy regarding the efficacy of these antiseptic agents in actually destroying or reducing the number of bacteria. Perhaps one exception may be found in ether. Because of its excellent cleansing properties in removing grease, extensive fat debris and red blood cells, ether makes an excellent cleansing agent. Many wounds covered with grease are difficult to prepare adequately unless some solvent of this type is used. In combination with this property ether aids as a bacteriostatic agent and shows less injury to cellular tissue than many other chemical agents which are commonly used. At this stage it is highly important to remove all evidence of grease stains and tattoo marks from imbedded foreign material, which are in evidence. The complete removal of all visible evidence of imbedded foreign material may necessitate mechanical trauma in cleansing. Not infrequently the eradication of this material requires a brisk scrubbing with a stiff brush and in some instances it may be necessary to use minute dissecting instruments. This is justified here, however, on the basis that any remnant discoloration from foreign material which is permitted to remain at this time presents permanent markings which require much greater operative manipulation subsequently if correction is to follow. All non-viable or severely traumatized tissue, whether muscle, fascia or skin should be removed with the slightest amount of trauma. Extirpation by sharp dissection probably approaches the minimal trauma necessary.

Equally important with a thorough debridement is complete hemostasis. Effort should be directed to the production of a minimal amount of trauma and attention should be focused on the value of ligating blood vessels by means of a technic which dictates the inclusion of only blood vessels when ligatures are formed. An excellent material for ligation of blood vessels with minimal trauma is that of #80 white cot-

ton. One may ligate all necessary vessels with this material and by cutting the ligature at the knot a minute quantity of foreign material is required for effective hemostasis. Meade has shown that buried cotton sutures produce a minimal amount of foreign body reaction in the tissues.

One of the cardinal principles in satisfactorily closing a wound is the obliteration of dead space. This should be done without strangulation. It may frequently be necessary to obliterate some dead space by properly applied tension sutures passed through the skin to the depth of the wound and out through the skin on the opposite side. Tension on sutures of this sort should be directed towards the approximation of tissue borders without force. Wound closures should be directed towards the approximation of tissues in their normal anatomic relation, the muscle layers being held in normal apposition while fascia should be sutured to fascia. The final stage of closure consists of proper apposition of skin borders in a manner where anatomic relations are established. No distortion or abnormal tension should exist. Care should be exerted that skin sutures be used which are non-irritating and which create a minimal amount of local tissue reaction.

Edema follows the closure of all wounds and a suture which originally has been placed under slight tension will show increased pressure on skin during the subsequent swelling which is sure to follow. This invariably causes mechanical trauma to the skin surface and frequently irritates and cuts into the substance of the skin to a degree that produces suture cross marks which leave permanent scarring.

Following wound closure one can further aid in the obliteration of potential dead space by applying satisfactory pressure over the wound. Pressure should be applied which will be physiologic, thus avoiding an excess which might result in the diminution of blood supply to the part. Pressure can be satisfactorily applied over agents such as sea sponges or cotton waste. Either of these agents act as satisfactory materials for the reception of pressure and serve to distribute evenly pressure when applied. Another important factor in satisfactory wound healing, which affords comfort to the patient as well, is that of splinting. Fixation by splinting is quite as important in injuries of the soft parts as in injuries of bone. One finds that healing is more rapid and satisfactory if this principle is followed. Not infrequently the difference between incomplete stabilization and actual fixation of a wound of the soft parts is delayed healing with unsightly scar.

SUBSEQUENT TREATMENT

Important is the early removal of sutures. One should remove all skin sutures at the earliest possible moment, starting as soon as the second day, attempting to have them completely removed within three to four days. This procedure is, of course, hazardous if a given wound has been closed under considerable tension and the procedure must definitely be modified by this state. One should always be careful in supporting wounds where sutures are removed early.

Defects of the face which have been unsatisfactorily repaired or which have healed following extensive infection frequently present extensive problems in reconstruction. These defects uniformly present unsightly distortion and dysfunction. Where an injury has been sufficient to cause the complete loss of an eye one commonly sees a depression defect along either the supra- or infra-orbital ridge. Associated with this there may be sufficient contracture to cause a marked ectropion and sufficient loss to tissue to produce an orbital cavity which is so reduced in size that it is impossible for the patient to carry an artificial eye. Repair here entails the implantation of cartilage for the correction of depression defects over either the supra- or infra-orbital regions. Subsequent to this it is necessary to extirpate all excessive scar found in the orbital cavity and establish a lining of the orbital cavity sufficiently large to permit the insertion of an artificial eye. In order to maintain the lining of a cavity following this procedure one

Fig. 3A. Because of a fixation of the lower jaw (in open bite position) as the result of fractures, this patient could neither open nor close mouth.

Fig. 3C. Photograph showing ability of patient to close the mouth in normal fashion subsequent to the above described correction.

must make a mold of the desired cavity from a plastic dental compound and cover this with a half-thickness skin graft removed from non-hair bearing skin. In applying the graft the skin surface should be applied to the surface of the mold and this in turn inserted into the newly reconstructed cavity. In this manner the skin is held in accurate apposition to the denuded surface of the reconstructed orbit so that adequate pressure may be applied to facilitate a complete take of the skin graft. It is necessary to keep the reconstructed orbital cavity dilated for a period of four to six months in order that contracture does not follow. After this time the desired size of the cavity is usually maintained and the artificial eye is worn with little or no difficulty.

Fig. 3B. Following incision through the right perpendicular ramus of the mandible, with advancement of the lower jaw, the patient now shows normal movement of jaw.

Injuries which have caused the loss of soft tissues over the nose may result in complete atresia of one or both nostrils. When this occurs it is necessary to reestablish the normal opening of the involved vestibule and maintain this with a mold which is identical in size and shape with the newly established vestibule. Over this mold a half-thickness skin graft is applied and when the stent or mold is reinserted into the vestibule the graft is held in accurate approximation with all denuded areas in a manner which facilitates the take of the graft. Here again it is necessary to maintain complete dilatation for a period of approximately six months. If there has been a complete loss of the tip of the nose or a large portion of the nasal framework a complete rhinoplasty must be done in order to replace the missing tissue so that normal contour is reestablished. This reconstruction may be carried out by means of a single pedicle forehead flap which has been lined on the under surface by means of a

half-thickness skin graft; in some instances it may be satisfactorily done by means of a tube pedicle transplant.

RECONSTRUCTION OF THE EAR

Not infrequently one sees the loss of a large portion of an ear and in some rare instances the entire part is missing. The complete reconstruction of an ear may be satisfactorily carried out by means of a tube pedicle skin transplant which contains sufficient cartilage to approximate the normal ear in size and shape. Some surgeons advocate the complete reconstruction of an ear by burying an adequate amount of cartilage beneath skin, subsequently the posterior surface is exposed and covered by means of a half-thickness skin graft. Where there has been complete atresia of the external ear, reconstruction entails the complete extirpation of all scar in order to reestablish the normal opening of the canal. Following this it is necessary to apply a half-thickness skin graft in the newly reconstructed canal over the surface of a mold of the part. Just as in other reconstructed cavities where skin grafts have been applied as a lining it is necessary to maintain complete dilatation for approximately six months.

Injuries at or about the mouth which have healed with an abundance of scar usually produce considerable distortion as a result of contracture. The basic principle here is again the complete extirpation of all scar necessary to permit the muscles and other soft tissue to resume their normal anatomic relation. This procedure commonly is followed by the creation of a sizeable defect, the surface of which must be covered either by a pedicle skin transplant or a skin graft; otherwise a similar distortion will result. In some extreme cases where the defect involves the entire thickness of the cheek, repair requires the implantation of a tube pedicle skin transplant which is identical in size and shape.

DEFECTS OF THE FACE AND SKULL

Because of a rapidly developing edema, fractures of the bony framework of the face and occasionally fractures of the skull are overlooked. Rarely fractures which have been diagnosed are improperly reduced with the result that healing occurs in malposition. Fractures which involve the floor of the orbit commonly cause downward displacement. The usual complication which results is that of diplopia. Where this condition is diagnosed in the acute stage, correction may be satisfactorily carried out by elevating the displaced bony fragments. Unless the fracture is such that adjustment can be made by external manipulation it is usually necessary to elevate the floor of the orbit by gentle upward pressure applied along the roof of the antrum. This procedure can be carried out very satisfactorily, and following reduction of the bony fragment it may be held in place by means of a gauze pack. This relatively simple procedure not only obviates an unsatisfactory change in contour but also the distressing symptoms which go with diplopia. If correction is not carried out in the early stages, fixation with rapid healing occurs. Correction of the above defect, following healing of bone, entails the addition of cartilage, added to correct the defect in contour as well as the displaced orbit. This procedure must always be considered as a compromise procedure for it seldom approaches perfection. Diplopia can be greatly improved by this method but complete correction is extremely difficult.

Failure to correct a mal-alignment of the nose following fracture of the nasal bones is to subject a patient to a rather formidable operative procedure if correction is obtained subsequent to healing. Prior to healing, reduction of a nasal fracture to obtain correct alignment is a relatively simple operative procedure; in contrast to this, correction of this same defect after healing occurs, requires refracturing of both nasal bones along with a slight separation of the nasal bones in the midline. Not infrequently in late fractures which have healed with mal-alignment, a displaced septal cartilage has been overlooked which will require a submucous resection for the establishment of an adequate airway.

Defects of the skull following compound fracture with complete loss of sizeable por-

tions of bone, frequently manifest themselves as defects in contour which are unsightly. Repair in these instances may be accomplished by shifting a portion of the outer bony table, adjacent to the defect, from its original position to cover and protect the area where there was complete bony loss. This is a rather formidable procedure and for this reason replacement of loss of skull bone by means of a portion of celluloid, shaped to conform in size and contour with the defect is a much simpler procedure. Celluloid is molded so that its surface assumes approximately the normal contour of that portion of the skull and it is sterilized in such manner that it maintains this shape. At the time of operation the celluloid is cut to conform in size and shape with the resulting defect. It is then attached firmly in the desired position so that it acts as a surface covering for the exposed dura as well as a supportive framework to build out the normal contour of the skull at that site. The celluloid may be firmly attached by sutures, fixing it to the surrounding periosteum. The scalp is then tightly closed over the celluloid and firm pressure is maintained for several days. Little foreign body reaction is manifested toward this material and within a few weeks it is firmly adherent and immovable.

Loss of any considerable portion of the mandible demands replacement by means of a bone graft, otherwise muscular pull will tend to approximate the two ends of the bone to disturb the occlusion of the teeth. If loss has been at all considerable this produces malocclusion of the teeth; if seen in a deciduous patient the distortion is sufficient to prevent the construction of a satisfactory plate. Where there has been a bony loss it is advisable to maintain the mandibular rami to as near normal position as possible until healing of the soft parts occurs. One should permit at least three to four months' time to elapse before considering the implant of a bone graft. After an adequate time has elapsed, replacement of the missing bone can be satisfactorily accomplished by the introduction of a bone graft removed either from a rib or the crest of the ilium. The graft which is adequate in size and shape is attached firmly to the corresponding ends of the rami of the mandible which form the borders of the defect. It is preferable to mortice the ends of the graft with the body of the mandible and to hold the ends in firm fixation by means of sutures of silver wire or kangaroo tendon. After firm healing has taken place one may remove the wire with little difficulty.

If an injury to the jaw has caused fracture with displacement of one or more condyles, one may find a partially dislocated jaw which is manifest by malocclusion of the teeth and marked limitation in the open bite. If correction of this does not occur in the early stages one may subsequently be forced to remove the offending bony fragment and find that the creation of an artificial joint is necessary. In some extreme cases it may be necessary to sever completely the perpendicular ramus of the mandible in order to bring the jaw into a forward position.

SUMMARY

Various types of facial injuries and defects have been presented. Their immediate treatment and subsequent reconstruction have been discussed.

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DISCUSSION

Dr. L. H. Strug (New Orleans): With the recent advances in the use of sulfonamides, I was wondering if Dr. Owens had had any experience with these drugs, in the treatment of acute wounds. It has been our experience that the use

of the sulfonamides and their derivatives in acute injuries has not been beneficial because it delays wound healing. I have not had much experience with face injuries, but I have had with other injuries, such as the hands. It has been shown that there is a definite tendency to delay wound healing. There has been a deposition of bloody serous material, cultures of which prove to be negative, a fair amount of tissue necrosis, and the granulation tissues resulting always seem to be unhealthy.

Another comment I might add in the treatment of acute facial injuries is the use of the nasal tube. Nasal feeding limits the motion of the nose and lips and thereby facilitates healing.

Dr. J. D. Rives (New Orleans): My reason as a general surgeon for entering into this discussion lies in the fact that we have in Louisiana less than a half dozen men trained in plastic surgery, all of whom are located in the larger cities, whereas we have a great many facial injuries, most of which occur in smaller communities and must be handled by whatever physician is most readily available. Consequently, it becomes necessary that every doctor, no matter what may be his specialty, should know something about the management of facial injuries. If these injuries are properly handled at the time they are first seen, plastic procedures will usually be unnecessary and even if required at a later date are likely to be much less extensive.

Dr. Owens has discussed debridement and quite properly has stated that in facial injuries it should consist chiefly of the removal of gross contamination rather than in the removal of tissue. In wounds of the face every bit of tissue that remains attached and has a chance of survival should be left in place. It is very easy to remove fragments of skin or bone but they may be very difficult to replace. The proper use of such fragments may make extensive plastic procedures unnecessary.

I wish to emphasize one technical point in the management of these cases that has been advocated by many authors, particularly Barrett Brown; namely, that the replacement of partially detached structures in their proper relation to each other can be done much more easily and accurately by pushing than by pulling. If, for example, a flap of skin and subcutaneous tissue is ironed out with the fingers from its base toward the other margin of the wound, as you would a piece of wet cloth on an ironing board, the projections of the ragged edge will tend to fall accurately into their proper places. If, on the other hand, you attempt to pull this tissue into place, you are likely to place a projecting piece of skin into the wrong notch on the opposite margin, with the result that when you have finished you may have one or more pieces left over. After healing has taken place, this inaccurate disposition of the flap will result in distortion and contracture, which may require elaborate plastic procedures for their correction.

Dr. Neal Owens (In closing): I wish to emphasize the appropriateness of Dr. Rives' remarks relative to the saving of bits of tissue. Going further, I would like to emphasize too the importance, in some of the extensive wounds, of any attempt to arrive at a satisfactory cosmetic closure where there has been loss of tissue. It is frequently more advantageous to approximate the borders of a wound, leaving a gross defect at this time, than to attempt a forced closure which will approach a more satisfactory cosmetic result. This frequently results in strangulation with subsequent infection and loss of tissue. Many of these injuries go through the entire thickness of the cheek and as much as 2 to 3 centimeters of tissue are lost. Here it is better to approximate the borders of the buccal mucous membrane and the skin margins. In so doing one, as a rule, has less tissue loss and less secondary repair.

In reply to Dr. Strug: I have not used sulfanilamide in acute wounds. I feel that I would rather rely upon an adequate debridement than sulfanilamide.

THE THERAPY OF CEREBROSPINAL FEVER*

A COMPARATIVE ANALYSIS OF THE THERAPEUTIC RESULTS IN 97 CASES FROM CHARITY HOSPITAL OF LOUISIANA AT NEW ORLEANS

CARLO J. TRIPOLI, M. D.†
AND
RICHARD E. SELSER, M. D.†
NEW ORLEANS

Conflicting reports as to the therapeutic efficacy of single types of treatment of cerebrospinal fever have frequently appeared from different localities. Thus Hoyne[1] reported a 23.5 per cent mortality in 296 cases, Clyde and Neely[2] no deaths in 10 cases, and Gregory and his associates[3] a 42.4 per cent mortality in 33 cases. The results are widely different, but antitoxin was used in all the cases.

The reason for the variation in the death rate in different epidemics and in the same epidemic at different times, regardless of

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†From the Helis Institute for Medical Research and the Department of Medicine of the School of Medicine of Louisiana State University, New Orleans, Louisiana.

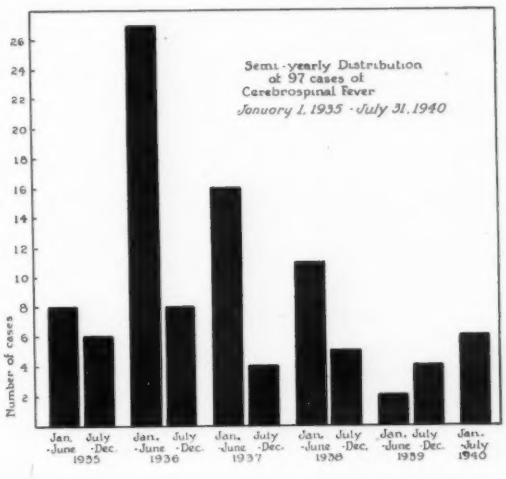
the method of treatment used, has been the source of frequent discussion. For that reason it may be of interest to analyze the results of different therapeutic regimens used in a large number of cases occurring both sporadically and in epidemics in one locality over a long period of time. Such an analysis would also seem more important in the evaluation of the efficacy of a therapeutic regimen than the study of a single epidemic in which a single type of treatment or a combination of types was used.

In 1936 one of us (Tripoli[4]) studied the results of therapy in various types of bacterial meningitis at the Charity Hospital of Louisiana in New Orleans over the previous 10 year period. A review of the records at that time showed that the mortality in 221 cases of cerebrospinal fever was 65.15 per cent. Serotherapy was used in most of the cases. Since that report was made, specific antitoxin therapy and sulfanilamide and its derivatives have also been employed in the treatment of cerebrospinal fever. The present communication concerns the results of these various types of treatment in the 97 cases which occurred in Charity Hospital of Louisiana from January 1, 1935, to July 1, 1940.

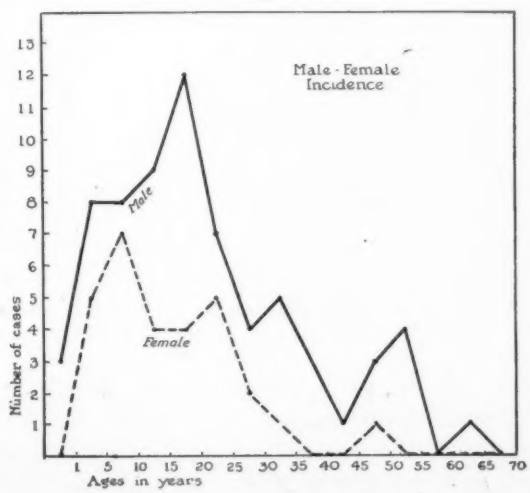
ANALYSIS OF CASES

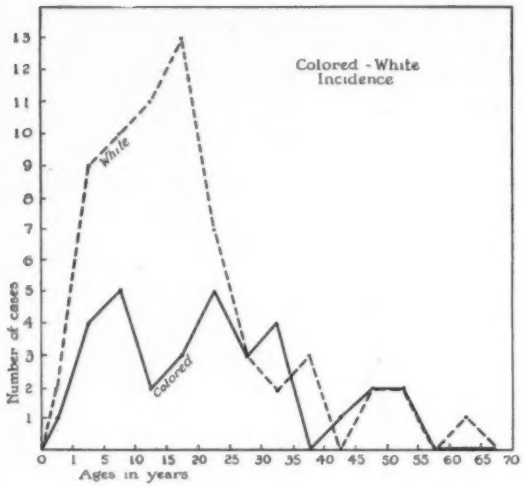
In all 97 cases included in this series the blood culture was positive or the meningococcus was demonstrated in the spinal fluid by smear or culture. During the same period many other cases were diagnosed and treated as cerebrospinal fever, but they have been excluded from this study because the organisms were not demonstrable. Had they been included, it might be added, the general mortality, as well as the mortality rates for various types of treatment would be considerably less. A few cases were also excluded from this analysis because, although the bacteriologic studies were positive, the patients were moribund on admission to the hospital and died within 12 hours, before adequate treatment could be instituted.

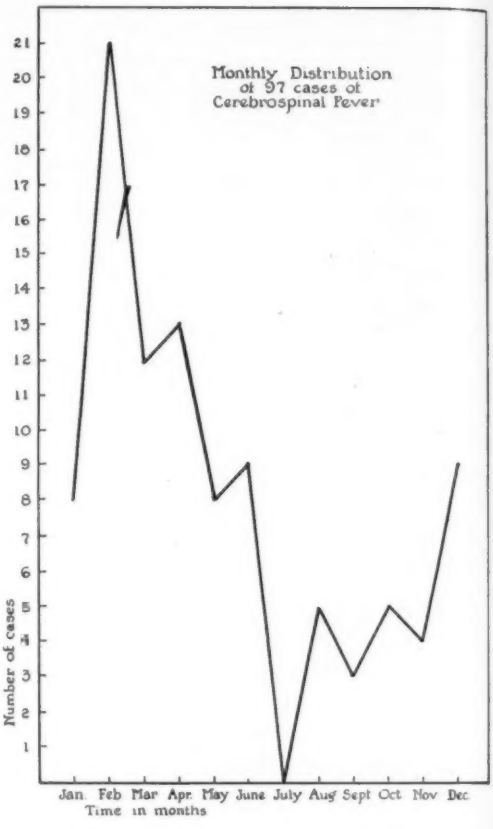
An analysis of these 97 cases according to date of admission shows that by far the largest number, 35, were admitted and treated during 1936. Fourteen patients were observed in 1935, 20 in 1937, 16 in 1938, and six each in 1939 and in the first six months of 1940.

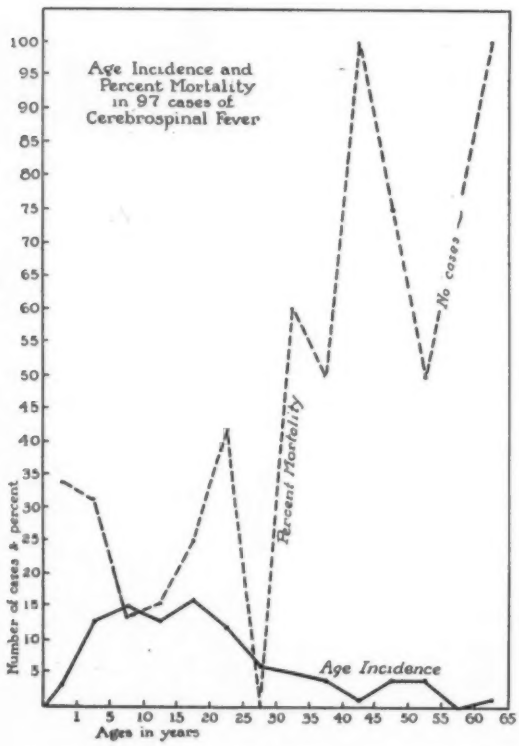


Sixty-eight patients were males and 29 females, and 65 were white and 32 colored. The age range was from four months to 63 years of age. The largest number of cases (56, 57.73 per cent) occurred between the ages of five and 25 years.





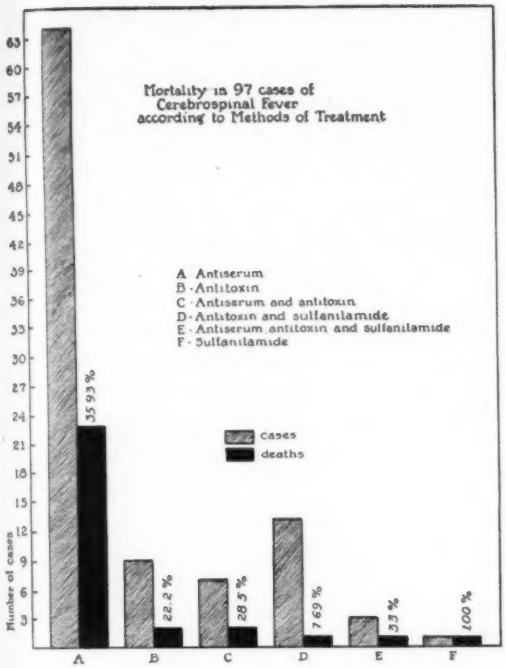

Monthly Distribution
of 97 cases of
Cerebrospinal Fever
Number of cases
Jan. Feb Mar Apr May June July Aug Sept Oct Nov Dec
Time in months



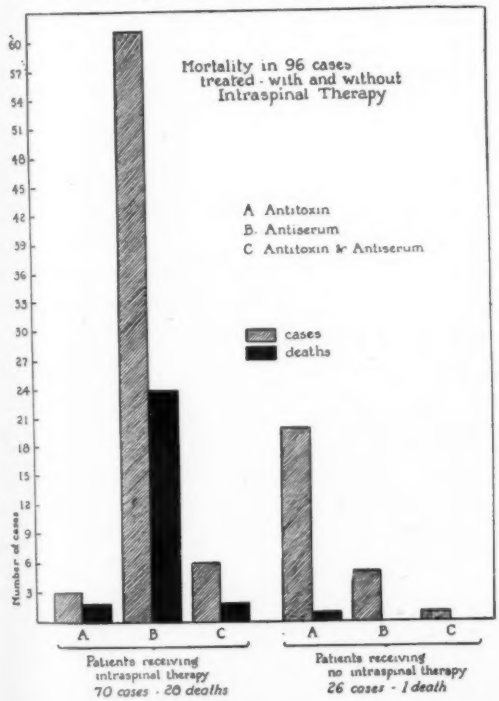
A study of the seasonal variation shows that the largest number of cases (67, 69.0 per cent) occurred between November 1 and April 30, that is, during cool weather.

THERAPEUTIC REGIMENS

This group of patients, as has been stated, were treated with antiserum, with antitoxin, and with sulfanilamide and its derivatives with and without antiserum and antitoxin. The routes of treatment were oral, intramuscular and intravenous, with and without intraspinal injections. The distribution was as follows: Sixty-four patients were treated with antiserum alone, with a mortality of 35.93 per cent. The routes of treatment were intravenous, intramuscular and intraspinal. Seven patients were treated by antiserum (intravenously, intramuscularly and intraspinally after spinal drainage) plus antitoxin (intravenously and intraspinally) with a mortality of 28.5 per cent. Nine patients received only antitoxin (intravenously and intramuscularly) plus spinal drainage, with a mortality of 22.2 per cent. No intraspinal injections were given in this group.



Thirteen patients were treated by a combination of methods: Antitoxin was given intravenously and intramuscularly and sulfanilamide was given orally. Spinal drainage was instituted, but no intraspinal injections were given. The mortality in this group of cases was 7.69 per cent.



Three patients were treated by: (1) Antiserum, which was given intramuscularly, intravenously and intraspinally; (2) antitoxin, which was given intravenously and intramuscularly; and (3) sulfanilamide, which was given orally and intramuscularly. There was one death (33.3 per cent). This group of cases is too small to be of statistical value, but the results are interesting, for the patients all had evidence of encephalitis and were desperately ill when they were admitted to the hospital.

The remaining patient was treated only by sulfanilamide. He did not recover, but perhaps he should not have been included in the series, for he developed cerebrospinal fever two weeks after a basal skull fracture and the severity of the contributory head injury somewhat confuses the issue.

PLANS OF TREATMENT

When antiserum was used, the general plan of treatment was to administer by vein 40 to 60 c. c. of serum diluted in 200 c. c. of saline solution, plus a similar dosage intramuscularly. When the intraspinal route was employed the serum was administered by the gravity method, after spinal drainage, in amounts of approximately 75 to 95 per cent of the volume of the spinal fluid withdrawn. The same dosage was repeated every eight to 12 hours until the spinal fluid became free from organisms and the temperature curve approached normal. In the patients in whom recovery ensued this usually occurred in from seven to 21 days.

In the early period of the study, antitoxin was administered, like antiserum, by the intravenous, the intramuscular and the intraspinal route. The intravenous and intramuscular dosage was 10,000 to 40,000 units and the intraspinal dosage 10,000 to 20,000 units. The same dosage was repeated every 12 to 24 hours until the spinal fluid became sterile and the temperature curve approached normal. In patients in whom recovery ensued this usually occurred within five to 10 days. The intraspinal route

was soon discontinued both because of the unfavorable reactions which followed it and because the patients appeared to do better when it was not used.

When sulfanilamide was used with or without antiserum or antitoxin, it was administered by both the oral and the intramuscular route. The oral dosage varied from 3 to 6 grams every four hours for the first three to five days. Then the dosage was reduced to 2 to 4 grams every 24 hours and was kept at this level until the spinal fluid became sterile and the temperature curve approached normal. The intramuscular dose, which was approximately one-fourth the oral dose, was given simultaneously with it. In patients in whom recovery ensued this usually occurred within three to eight days.

The introduction of sulfanilamide and the demonstration of its efficacy in the treatment of cerebrospinal fluid has added another important agent to our armamentarium. The number of cases in this series in which it was used is not large enough to permit sweeping conclusions, but the results are significant in themselves and become more significant when they are compared with results in other reported series.[5, 6] The marked reduction in mortality which is apparently due to the combined use of sulfanilamide and antitoxin is more than coincidence. Furthermore, the results in the Charity Hospital series are important in view of the fact that at one time or another all methods of therapy were being used simultaneously on the same service and on different services.

When one considers the apparently equal efficacy of sulfanilamide and antitoxin, and when one bears in mind the simplicity of administration and the lower cost of sulfanilamide, it is easy to understand its constantly growing popularity. It is also easy to understand the tendency to use it alone in the treatment of cerebrospinal fever. An excellent contribution to its value is found in the report of Seid,[7] who used it prophylactically in moderate doses in an epidemic of cerebrospinal fever and who concluded, with undue conservatism in view of his results, that it was "not valueless" as a prophylactic measure during the period of its administration. His results compare very favorably with the results of antiserum and antitoxin as prophylactic measures, and sulfanilamide has the added advantage of ease of administration.

A review of published data permits no doubt of the therapeutic superiority of antitoxin over antiserum. Since Ferry[8] introduced antitoxin and Hoyne[1] impressively demonstrated its efficacy many published reports have confirmed their observations. Gregory and his associates,[3] however, found little difference in the therapeutic efficacy of antitoxin as compared with antiserum, though they considered sulfanilamide decidedly superior to both.

There has been considerable discussion over the method of administration of antiserum and antitoxin, particularly with regard to the intraspinal route. If cerebrospinal fever be considered a local infection of the leptomeninges, surgical drainage (spinal taps) followed by local injection of the specific therapeutic agent would appear to be both logical and correct. But the disease, in all probability, is primarily a septicemia, with subsequent localization in the spinal canal, a concept which makes the surgical principles just stated appear illogical. Furthermore, they are not really applicable, for any therapeutic agent introduced into the spinal canal has little opportunity of reaching the lateral ventricles, to accomplish this purpose it must go against the circulation. On the other hand, when a therapeutic agent is given intravenously, as antitoxin, or orally, as sulfanilamide, it reaches the entire central nervous system via the blood stream.

Spinal fluid drainage by means of repeated spinal taps has been advocated because it is believed to increase the flow of spinal fluid and thus to facilitate action of the specific therapeutic agent. Even this factor, however, is apparently not of as great importance as it was formerly believed to be. Cisternal drainage in the absence of spinal block (as was observed in two cases in the Charity Hospital series) is

not superior to lumbar drainage. Furthermore, intracisternal injection of antiserum or antitoxin is potentially more dangerous than intraspinal injection, and our results lead us to doubt its efficacy at this time.

Analysis of these statistics, as a matter of fact, suggests the futility of any type of intraspinal therapy. The best results (one death in 13 cases, 7.69 per cent) were obtained by the use of antitoxin by vein and by muscle combined with sulfanilamide per orem and by muscle. In the 70 patients in whom the intraspinal route was used (antiserum in 61, antitoxin in three, and antiserum and antitoxin in six) there were 28 deaths, 40 per cent, and a large number of unfavorable reactions. In the 26 patients in whom the intraspinal route was not used (antiserum in five, antitoxin in 20, and antiserum and antitoxin in one) there was only one death, 3.8 per cent.* The difference in the mortalities speaks for itself. Similar results are found in a recent report by Hoyne.[9] He suggests that intraspinal therapy may be contraindicated in the treatment of cerebrospinal fever.

OTHER DATA

No relationship could be demonstrated between the mortality, the character of the initial spinal fluid findings, or the duration of the disease before treatment was instituted. Indeed, it was surprising to observe the number of cases in which the duration of illness varied from several days to two weeks before the patients had entered the hospital. We are, however, in accord with Musser's[10] observation that the mortality, generally speaking, is higher in the patients who show well marked clinical evidences of encephalitis when they are first seen. We are also in accord with Hoyne's[1] observation that the mortality is consistently lower in patients under 15 years of age, regardless of the treatment used, than in the older age groups.

SUMMARY AND CONCLUSIONS

An analysis has been made of the methods of treatment used and the results obtained in 97 cases of cerebrospinal fever which occurred during a recent five and a half year period in the Charity Hospital of Louisiana at New Orleans. Our own experiences and the experiences of others make it clear that the combined use of antitoxin and sulfanilamide gives better results than the use of either agent alone. Serotherapy, regardless of the type of serum used, does not approach the therapeutic efficacy of either antitoxin or sulfanilamide.

Other sulfonamide drugs as sulfapyridine and sulfathiazole appear to be as equally effective, therapeutically, as sulfanilamide. Especially interesting are the results following the use of sulfadiazine (2-sulfanilamidopyrimidine) described as "the pyrimidine analogue of sulfapyridine and sulfathiazole." It appears from the reports[11, 12] that sulfadiazine is equally effective against the meningococcus and has the added advantage of being less toxic.

The value of any sort of intraspinal therapy is doubtful.

*The case in which only chemotherapy was used is omitted from this analysis.

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DISCUSSION

Dr. John H. Musser (New Orleans): Dr. Tripoli has been interested in the treatment of meningitis for quite some years. I remember seven years

ago he presented a paper at the meeting of the A. M. A. and at that time he literally tried everything under the sun in order to improve the mortality rate in the patients who had meningitis coming into the contagious disease service at Charity Hospital. You may remember, in the third or fourth slide he put on, he had innumerable ways of treating this condition, including injection of Pregl's iodine, and the results were not good. As a matter of fact at that particular meeting Dr. Josephine Neal, Associate Director, Bureau of Laboratories, New York City Department of Health, who has charge of the meningitis division thought that our figures were much higher than they should be. This was explained in part because of the fact that many of the cases of meningitis which came into the Charity Hospital were patients who came late, whereas in New York City as soon as a child evidences a meningitis, poliomyelitis or encephalitis, the City Department of Health is informed and the care of the children devolves more or less upon these experts. Certainly this particular division, I think composed of three doctors, who are called in to every case, obliged to be there as a matter fact, might explain in part the difference in mortality rate; namely, the lateness of seeing these patients here and the fact that in New York City, where the figures are more favorable, they saw cases very promptly.

Now, with the present methods of treating meningitis, the reports from other sections of the country would indicate that the results obtained here in our hospital are comparable to the best figures published in the country. I think those results are dependent upon the fact that the sulfonamide preparations are without peer, literally, in the treatment of practically any infection and I think that the second important factor is that the use of lumbar punctures has been discontinued. The mortality rate now, with the treatment with sulfonamide preparations, antitoxin or antiserum intravenously, and absence of lumbar punctures, is really sensational and startling. The last chart which Dr. Tripoli showed was a beautiful example of that. In his mortality figures, of the pneumococcic meningitis, I think one patient recovered. We feel very badly today if a child or young adult comes into the ward and does not get well. The mortality rate of influenzal meningitis has been considered always to be one hundred per cent. I believe that there are some thirty cases reported in literature and Dr. Strange has reported an additional case of influenzal meningitis which has recovered.

I think that it is of prime importance then, to those of you who are engaged in the treatment of meningitis, to bear in mind that apparently drainage of the spinal canal is officious. It is not only not necessary but is definitely harmful. Do not repeatedly puncture the spinal canal; do it once for purposes of diagnosis and then maybe repeat once and let it go at that, and use sulfanilamide preparations. Dr. Tripoli has analyzed the type of preparations used. My impresison is that sulfathiazole is the most efficacious. The number of cases, of course, is relatively limited and we can not draw any generalization from a small number of cases. I do not believe that it is due to the fact that the meningitis organism, meningococcus, is relatively avirulent at the present time. Remember that Dr. Tripoli's figures were over a few years at least. I think his figures show very definitely that the methods employed at the present time are of very distinct advantage in the treatment of the patient who has meningococcal meningitis or may have meningitis due to other types of organisms.

Dr. Gilbert C. Anderson (New Orleans): The subject matter of this paper in regard to the details of therapy, indications and changes in management of the cases, has been so thoroughly covered by the discussion of Dr. Musser as to leave nothing for me to add. However I would like to emphasize some of the general principles laid down and particularly his last statement regarding the present trend of the management of these cases. We saw a signpost in this direction some years ago when we gradually discontinued the intrathecal treatment and now if we can also dispense with the repeated spinal fluid drainage we will have made another long step in advance. Reports such as the one Dr. Tripoli has brought to us tonight are extremely valuable as they acquaint the practitioners in general with just what is going on in the large hospitals where these cases congregate in numbers. Of course very few men in their private practice can expect to see the various types of meningitis in such numbers or to have the facilities for comparative studies. This report covers the past four years and in a previous study he reviewed the cases for the preceding ten years so we now have a comprehensive review of a fourteen year period in a large hospital where all types are received. It is from such studies as this we can reasonably draw conclusions of some value.

Dr. C. J. Tripoli (in closing): The administration of the sulfonamide drugs prophylactically, as mentioned before, to those individuals exposed to cerebrospinal fever, is worthy of further comment. In 1934 one of our medical teachers developed meningococcic septicemia from which he died 24 hours later. The students, to whom he lectured the day he became ill, desired to be protected from the disease to which they had been exposed. The question arose as to what to do for the students. We did not know what to do and after fooling around with throat cultures from the exposed students we gradually forgot it. Fortunately no further cases developed in this instance.

Certainly the advent of the sulfonamide drugs, as reported by Seid,[7] has now added an apparently effective prophylactic agent in the management of cerebrospinal fever contacts.

ELECTRO-SHOCK THERAPY*

WALTER J. OTIS, M. D.
NEW ORLEANS

The psychiatrist ever on the alert, seeking or investigating methods which will improve the condition of the mentally ill, is always willing intelligently and searchingly to follow the roads of true science for that purpose.

Convulsion therapy in mental and nervous disorders has made its debut into the realm of psychiatric medicine, in the form of electro-shock performed on animals by Leduc in 1900; Robinovitch of Nantes in 1911, and later by Clark and Wall.

Refreshing our memory, herein is presented a resumé dealing with steps relative to the progress in the treatment of mental disorders, which, in keeping with the topic, is most relevant.

STEPS IN THE PROGRESS IN THE TREATMENT OF MENTAL DISEASES

Antiquity		Magic, sorcery, alchemy, trephining and so forth
Pompilius	715 B. C.	Electricity
Pythagoras	580-500 B. C.	Music
Hippocrates	460 B. C.	
Plato	429 B. C.	Golden Age of Greece
Aristotle	384-322 B. C.	
Asclepiades	124 B. C.	Father of psychiatry; advised against restraint
Galen	131-201 A. D.	
Tralles	525 A. D.	Dark centuries for psychiatry
Toulum	874 A. D.	
	1410	Institution of insane asylums at Seville and at Padua
Paracelsus	1493-1541	Advised use of camphor
	1547	"Bedlam"
von Helmont	1577-1644	Plunged patients into cold water
Raleigh	1584	Discovered curare in Guiana
De Marillac	1611	
De Paul	1651	Church influence and Hospital Reform
Pinel	1792	Humane treatment of the insane
Tuke	1794	York Retreat
Esquirol	1810	Underwater and electrical treatment
Reil	1759-1813	Founder of modern psychiatry
Rush	1745-1813	Tranquilizer, gyrator
Dix	1840	Improved hospital care for the insane
Bleckwenn and others	1927	Carbon dioxide inhalations
Bleckwenn and others	1930	Narcosis
Huhnerfeld	1932	Hematoporphyrin
Bamford and others	1932	Pyrexia of various forms (aseptic meningitis)
Many workers	1933	Endocrine therapy
Sakel	1934	Insulin shock therapy
Meduna	1935	Metrazol shock therapy (and others)
Moniz	1936	Surgical treatment
Reiter	1937	Blood transfusion
Alexander and others	1938	Nitrogen inhalation
Cerletti and Bini	1938	Electric shock
Spies and others	1938	Vitamin therapy
Bennett	1939	Spinal anesthesia
Bennett, Cameron and others	1940	Curare
		Beta-erythroidine

This type of convulsion is induced by the electrical method as a substitution for the generally used pharmacologicals; that is, metrazol or other preparations. The present electroconvulsive therapy received its stimulus in 1938, when Cerletti and Bini, in Rome, obtained amazing results in cases of schizophrenia, producing petit and grand mal like reactions.

For our use I have found a special apparatus (Rahm), which conforms to the requirements of electrology necessary in producing the convulsive shock.

The method involves production of a convulsion by the application of a known potential difference for a known period of time between the frontotemporal regions. The apparatus comprises: (1) System of electrodes by which the current is applied to the head; and (2) the control apparatus by which the electric charactertistics of the situation are controlled. Large electrodes are used, mounted by movable articulations to a bearer system of unoxidizable metal with a spring-like action permitting forcible adherence of the electrodes to the frontotemporal regions. The electrodes consist of interlacing bands of thin copper strip laced around pads of soft rubber sponge. In the electric control apparatus there is a slow trial current for preliminary measurement of the resistance of the patient's head, which permits an estimation of the proper minimal voltage necessary to produce a convulsion. In this trial circuit a potentiometer is inserted with a graduated dial for the direct reading of the resistance

*Read before the sixty-second annual meeting of the Louisiana State Medical Society, Shreveport, April 22, 1941.

in ohms when one milliampere of current passes through the patient's head. The second circuit serves to produce the shock. For this, alternating currents having a frequency of 60 cycles per second are used. The circuit of the electric control apparatus contains a volt meter for determining the voltage to be applied, a milliammeter by which the current involved in the shock can be determined, and an automatic clock interpreter which breaks the circuit at a given time. In general, we have used potential differences of 70 to 100 volts for 1/10 second. To secure optimum electrical conduction, the frontotemporal regions of the patient are covered with a thin layer of electrode jelly. The electrodes are then covered with a thin layer of electrode jelly. The electrodes are then covered with gauze and moistened thoroughly with 20 per cent saline solution. They are applied bilaterally to the frontotemporal region slightly above and anterior to the ears. Usually the resistance gauged by the trial current measures between 200 and 600 ohms. In patients with a low resistance (below 300 ohms), I usually apply a potential difference of 70 volts. For patients with higher resistance, 80 volts are used. When the current is passing, a reading is taken from the milliammeter. A record of such readings is important for use in succeeding treatments. The response of patients to this method may be generalized convulsions, or, if the stimulus is below convulsion threshold, petit mal or absence. In event of the latter, a second or even third, attempt may be made after three to five minutes to obtain a generalized convulsion. Resistance should be measured before each new attempt, since it drops after each passage of current. The convulsive threshold is however increased. The minimum amperage necessary for obtaining a seizure is usually about 375 milliamperes.

The patient is prepared for the treatments by resting the night before. The next morning, no breakfast is given, bladder and rectum emptied, when possible. All parts should be checked and given a thorough examination, electrocardiogram, basal metabolic rate and x-ray of the spine, and the psychiatrist responsible should satisfy himself that the patient is a suitable risk.

Arriving in the treatment room, the patient is placed on a wooden table in the supine position, the inter-scapular spaces are protected. Artificial denture and metallic hair appointments are removed. The frontotemporal regions are rubbed with a jelly until a mild erythema is produced. Then follows the application of the calipers or head piece. A tampon gag is placed between the upper and lower jaws. The patient is held firm by attendants and shock is given.

The convulsion thus induced is a typical epileptic attack. Upon induction of the current, the patient loses consciousness and without an initial outcry the patient passes into a marked tonic convulsion with the trunk, legs, arms and hands in spastic semiflexion. Shortly clonic contractions follow and are of varying degree. Five minutes after the shock the patient answers, although still somewhat stuporous, and from eight to ten minutes later is restored. There remains a somnolent tendency. The advantages of this method are immediate and complete loss of consciousness, which persists for the duration of the shock. There is no excitement. The circulation is not affected except for slight acceleration of the pulse following muscular exertion in the clonic phase. The shock can be repeated a few minutes after an abortive attack. Further studies are being made to perfect technic and to provide for all possible danger sources. No deaths have occurred, nor are late ill effects noted. The clinical results are encouraging and not inferior to those obtained with cardiazol.

The marked disadvantages, that is, mental panic apprehensions and dread of the treatment, for the most part are lost in the unconsciousness, retrograde, amnesia and willingness to continue and cooperate at each visit. The patient is placed abed, following shock, and sleeping for a short period, awakes later and is then returned

to his room, or there may ensue a short period of bewilderment.

In this series of cases which began January 17, 1941 to April 15, 1941, 41 patients were treated. Ages varied from 20 to 66 years. The number of shocks given were 347; duration of illness was from two weeks to eight years.

Illnesses classed in the group were involutional melancholia, manic depressive depression, schizoid reactions, paranoid personalities, toxic, manic reaction type, and malignant dementia praecox cases.

SUMMARY AND CONCLUSION

The current use of electro-shock therapy has led to psychiatrists adding this to their mode of healing. The clinical results obtained are encouraging and are not inferior to other forms of shock therapy.

The results obtained in this series were: Recovered—males three, females 12; in remission—one female; stationary—males two, females three.

There are elements of danger, that is, fractures and dislocations, which should be explained to the agent of the patient and in all instances the necessary signed request form should be filled before any attempt at treatment is commenced. Shock therapy should be administered only in a hospital. Outpatients should likewise report there for their treatment.

The physician supervising or giving the shock should be a neuropsychiatrist, thoroughly familiar with his patient.

While a cure all is not claimed nor is the treatment considered a panacea, we are hopeful by the re-adjustments made by those of this series and one should be cautious in a forecast.

Experience is still limited. The technical problem is not as yet solved.

Perchance the electrically induced convulsions will provide the answer to convulsive disorders.

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DISCUSSION

Dr. C. S. Holbrook (New Orleans): Dr. Otis has brought to us the most recent advance that has been made in psychiatry; it is the accumulation of work of recent years, initiated by the insulin treatment and then by the metrazol treatment. This more recent treatment, the use of electro-shock to produce much the same results that metrazol did, is, I think, a definite advance. We still use insulin, and metrazol. However, I believe that electro-shock will replace metrazol. There are still definite indications for insulin. There are certain cases of mental disease that are malignant, especially schizophrenia and dementia praecox. These cases carry with them such a tremendously bad outlook, that we were all encouraged when insulin treatment and metrazol treatment were introduced, and we have with these treatments obtained better results than we could without them. Still, the outlook was not good. With electro-shock treatment, we are getting better results than we could without it.

It is not in the dementia praecox that we get best results. We still use it in dementia praecox cases and we do get good results, if we can get the cases early. The result depends inversely upon the length of time that the schizophrenic process has been going on. Those cases that have existed three, four, five years, are not promising. The cases that have existed a few months have a much better prognosis. We get the best results in the depressions, melancholia. These patients might get well in a year, eighteen months, or two years, with expectant treatment but with electric shock therapy recovery is often brought about in a few weeks.

The results are remarkable. In some of these cases of melancholia, patients are acutely unhappy, so miserable and depressed, but they are often relieved, put on the road to recovery, with four or six treatments by this method. The excitements also are benefited. The homosexual individuals, the acute panics that these people suffer from at times, are decidedly benefited, and a good deal can be done for them. Our best results are in the depressions, the next in the excitements and the early cases of dementia praecox, and the cases of homosexuality. It may be used in alcoholism; it has been tried in other conditions somewhat similar.

There is some danger, as Dr. Otis mentioned. In a compilation of 343 cases treated, the treatments amounting to 3,663, there were four fractures of the spine, and two fractures of the arm. This is rather low. These six accidents occurred in 3,600 cases. The fractures of the spine are not serious as a rule. The facets may be broken, but they are not crushing accidents as we see in automobile accidents; the cord is not involved. The worst thing is that it interferes with further

treatment. However, if the patient has had three or four electro-shock treatments, he is apt to be on the road to getting well, especially if he is suffering from a depression and the fracture does not give any trouble.

I believe electro-shock treatment has come to stay. It might give way to something else, as most everything does in medicine. Right now, it is a very valuable treatment.

Dr. Lewis A. Golden (New Orleans): Dr. Otis and Dr. Holbrook have covered adequately what we know about the subject. There is very little for me to add. I might emphasize that most of the new treatments in psychiatry are old treatments which have been rediscovered. Wagner von Jauregg, who is credited with the introduction of malaria fever for paresis, was really following in the footsteps of a Russian physician who had used the treatment sixty years before. Dr. Otis referred to the use of camphor by Paracelsus who produced convulsion and cured a mental illness in the 1500's. About forty years ago electrical current was used and coma and convulsions produced but without much notice. Many of these methods strangely enough, even though successful, were soon forgoten, or else not followed up methodically.

When metrazol, which produces convulsions, came into favor, we met with a great deal of resistance on the part of the patient, because when the drug is injected, the first 30-40 seconds are accompanied by a feeling of terrific panic and horror. This was such a handicap that the patients would plead and beg not to have another treatment. So I would like to re-emphasize that with electro-shock the patient loses consciousness immediately and the convulsion ensues. The convulsion usually lasts 45 seconds, very rarely lasts longer. The patients get extremely cyanotic, as a matter of fact, they look more cyanotic than with insulin or metrazol, but they quickly recover and have no memory of the treatment.

I would like to say that it is in the depressions that we have noticed the most striking benefit; I have not as yet had a real manic excitement, though one is under treatment now. One case of early dementia praecox did not respond, while several recent ones did.

Dr. Otis and Dr. Holbrook have both emphasized that we know very little about the rationale of the treatment or why it benefits at all. We know that, quite in contrast to insulin and metrazol, no serious damage has yet been seen in the brain from electro-shock in experimental work on animals. While this may not be exactly comparable to that given in man, still no fatality has been reported in over 9,000 treatments. We hope to be in a position to give you more information a year from now.

Dr. Roy Carl Young (Covington): In regard to this treatment Dr. Otis just talked about, to me it seems to be a radical procedure, and until some future time I think I will stick to the conservative plan of treatment in these cases.

I have had no personal experience, nor have I had any chance to observe the treatment of patients with this method. However, I have listened to the paper with an open mind and enjoyed it very much.

Dr. Walter J. Otis (In closing): I wish to thank Drs. Connely, Golden, Holbrook, Young and others for their interest and their discussion of the topic of electro-shock and their assistance in permitting me to incorporate some of their material in my paper.

At the present time, I feel we have acquired something from electrology which aids us and the individual to better levels in psychiatry.

Quite true, some have not been adjusted to normalcy, though a better re-adjustment level has been reached.

I feel, iikewise, that we should continue to use insulin and metrazol for there are certain types of persons who, from the psychotherapeutic standpoint, will react more favorably than possibly with electro-shock and different personalities require this type of treatment.

PRIMARY CARCINOMA OF THE LIVER*

CASE REPORT

SAMUEL H. COLVIN, JR., M. D.
NEW ORLEANS

Primary carcinoma of the liver is quite rare. Cirrhosis of the liver may bear some relationship to carcinoma of this organ, under which circumstance the symptoms, for a time at least, are those entirely of cirrhosis. The following case report illustrates well this observation.

CASE REPORT

This patient was a white male, aged 59, who was admitted to Touro Infirmary on December 18, 1940 and died January 14, 1941. He was by occupation a sea captain, was very well developed and nourished and suffered from lower abdominal pain.

On admission the patient did not appear acutely ill. The lower abdominal pain was first noted some six or eight months previously, but had become more severe during the past month (November, 1940). There was no definite localization and the pains were referred to as "gas pains," quite severe at times. Rest, enemata, and hot water bags had given relief until lately. There was no history of jaundice, bowel dysfunction or ascites. About four months ago an unexplained fever oc-

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*Read before the Orleans Parish Medical Society, February 24, 1941.

curred, accompanied by nausea and vomiting, at which time hepatomegaly was discovered by a physician. There was also dyspnea on exertion and some question of cardiac disease. Frequency and nocturia were severe and the patient was cystoscoped several times with negative results. There had been no weight loss according to the patient.

For many years this patient had been a heavy drinker and smoker, but lately had stopped smoking. The past history revealed no serious illness. One brother has diabetes and his mother died of carcinoma of the breast.

On physical examination there was no evidence of weight loss, jaundice, or ascites. The temperature, pulse, and respiration were normal. The following positive points were found: Bilateral anterior cervical adenopathy; lungs resonant except for a large area of liver dulness; breath sounds were harsh throughout. The heart was enlarged (or pushed) to left; A_2 greater than P_2; harsh systolic murmur, more prominent over mitral area. The abdomen was thick walled; liver palpable to pelvic brim with tender edge; peripheral arteriosclerosis.

Laboratory Data on Admission: Amylase normal. Wassermann and Kahn negative. Icterus index 6; urobilin and urobilinogen negative. Urine negative. Other routine laboratory work yielded no information. There was electrocardiographic evidence of myocardial disease. X-ray of the chest: Heart diameter was within normal limits; innumerable small and larger round shadows of soft tissue density were scattered throughout both lungs from apex to base, strongly suggestive of metastatic malignancy. Gastrointestinal studies negative.

Clinical Diagnosis: (1) Cirrhosis of liver; (2) metastatic carcinoma in liver and lungs with possible primary carcinoma of liver; (3) arteriosclerotic heart disease.

Course in Hospital: Treatment was largely symptomatic with codeine and morphine being used at times for relief of pain. Thirty minutes of diathermy per day was instituted over liver but pain grew worse. He received intermittent injections of 50 per cent glucose intravenously. Six days later it was thought that the liver could be palpated at the level of the umbilicus.

Seventeen days after admission hematuria developed, source undetermined. Abdominal pains grew steadily worse and progressive loss of weight was noted since admission.

The patient went rapidly downhill, developed pulmonary edema, started running septic temperature, became irrational, and died 26 days after admission.

SUMMARY OF AUTOPSY FINDINGS

1. Laennec cirrhosis of liver, 3425 grams.
2. Primary carcinoma of liver cells with erosion through inferior vena cava and formation of tumor thrombus.
3. Metastasis to lungs, adrenals, periaortic nodes, and lower pole of right kidney with erosion of calyx.
4. Chronic fibrous splenitis.
5. Ascites (3000 c.c.).
6. Arteriosclerotic heart disease (326 grams).
7. Prostatic hypertrophy.

DISCUSSION

Dr. Allan Eustis (New Orleans): I would like to say that the reason Dr. Colvin got a negative urobilinogen test was due to the fact, as shown by the micrograph, that there were sufficient normal liver cells to carry on this function. There was a large carcinoma of the liver and still there was a negative urobilinogen test.

THE DIAGNOSIS AND TREATMENT OF DISORDERS OF THE SEBACEOUS GLANDS (SEBORRHEIC DERMATITIS AND ACNE VULGARIS)

BARRETT KENNEDY, M. D.†
NEW ORLEANS

We are concerned here primarily with seborrhea and acne vulgaris and their complications.

SEBORRHEA

Seborrhea itself is a functional disorder of the sebaceous glands consisting of an increased amount of sebaceous secretion.

There are two general types of this disorder:

I. Seborrhea sicca: (a) Scaling form characterized by the formation on the scalp of fine, slightly greasy, greyish-white scales which may be so abundantly shed as to fall and cover the shoulder of the patient; (b) crusting form in which the scabs are pierced by the hair or matted together by the hair and all adherent to the scalp.

II. Seborrhea oleosa, characterized by the excessive amount of oil present in the secretion, especially on the scalp, forehead, nose and cheeks. The type often found in negroes and adolescents, and accompanying acne vulgaris. This is the type which frequently leads to baldness.

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†From the Department of Dermatology of the School of Medicine of Louisiana State University and Charity Hospital of Louisiana at New Orleans.

All types of seborrhea presenting inflammatory manifestations other than congestion are classified as seborrheic dermatitis. This is an acute or subacute inflammatory dermatitis which usually begins in the scalp and spreads to involve the seborrheic areas, so-called because of the large number of sebaceous glands in these areas. They are behind the ears, the external auditory canal, the sides of the nose, and adjacent cheeks, the eyebrows and upper eyelids, the sternal areas of the chest, the shoulders and back, the umbilicus, the axillae and groin.

Age: No age exempt.

Causative Organism: Pityrosporum ovale is usually given credit as the cause.

Complications: External otitis, infectious eczematoid dermatitis, conjunctivitis.

Sequelae: Neurodermite (Lichen chronicus simplex); exfoliative dermatitis.

DIFFERENTIAL DIAGNOSIS

Infants: Infantile eczema (atopic dermatitis); contact dermatitis (chemical or plant); intertrigo; diaper rash; fungus infection.

Adults: Psoriasis; allergic dermatitis; contact dermatitis (chemical or plant); infectious eczematoid dermatitis; intertrigo; coccigenic dermatitis; pityriasis rosea; fungus infections. In generalized cases, leukemia cutis and mycosis fungoides.

TREATMENT

General: A thorough investigation into the general health should be made, paying particular attention to anemias, dysfunction of the glands of internal secretion, foci of infection, gastrointestinal disorders and malnutrition.

In cases with severe inflammatory changes, warm boric acid or 1-5000 potassium permanganate packs several times a day are most useful, followed at night by the application of a 3-5 per cent ammoniated mercury in 5 per cent ichthyol ointment and a 2 per cent aqueous solution of gentian violet in the daytime. In cases where there is a marked evidence of secondary infection, the sulfanilamide compounds are used. The scalp hair should be cut short, and if the scalp is severely involved the same routine as given above may be used.

In cases of milder character the scalp is treated with: (1) Liquor carbonis detergens—apply to scalp once or twice a week with a toothbrush or eyedropper and wash out the next day with plain soap, Packer's or Grandad's tar soap, a commercial shampoo or a special shampoo, as:

Resorcin—4 drams
Tincture of green soap—q.s. 8 ounces

For patients with thick, scaly lesions a salve is prepared, as:

Salicylic acid—gr. 15
Ammoniated mercury or sulphur (ppt.)—gr. 30
Ung. aquae rosae—enough to make 1 ounce
M. et sig.: apply to scalp the night before washing with soap.

If a tonic is desired:

Bay rum—3 minims
Hydra. chlor. corrosivum—2 gr.
Ammonium chloride—20 gr.
Salicylic acid—1 dram
Resorcin—1 dram
Castor oil (with dry scalps)—4 minims
Alcohol (70%)—enough to make 6 ounces
M. et sig.: apply to scalp as directed several times a week.

Patients should not expose their scalps to sunlight before they remove the liquor carbonis detergens. Blonds should not use resorcin. Patients should be warned not to get permanent waves before they have thoroughly removed the sulphur, as discoloration will result. Recently Paul Gross, studying the effects of vitamin B and liver in various "non-pellagrous" eruptions, reported that the so-called localized seborrheic eczemas responded promptly and favorably to injections of liver. I have used it only recently and in a limited number of cases with marked success. It is administered at the rate of 5 to 10 units of the unconcentrated liver extract every five to

seven days. B complex capsules and dilute or concentrated hydrochloric acid are given additionally.

ACNE VULGARIS

Acne vulgaris is a chronic inflammatory disorder of the sebaceous glands characterized by the development of shallow or deep pustules associated with comedones and seborrhea of the scalp. It is limited to the areas where the sebaceous glands are well developed. It may be accompanied by hirsutism, especially in brunette types.

ADDITIONAL TYPES

(a) Acne cacheticorum or scrofulosorum—in those suffering from anemia, tuberculosis, or other severe constitutional disorders. Large, dusky red, inflammatory placques, abscesses and oil cysts, double comedones, discharging sinuses. The face, chest, lower back and buttocks, and extremities are all involved.

(b) Keloid acne—where the tendency to keloid formation is marked.

(c) Acneform eruptions—lesions occurring in areas selected by acne vulgaris.

1. Chemicals—halogen group (iodides, bromides, chlorine, fluorides).
2. Neurotic excoriations.

(d) Acne rosaceo.

ETIOLOGY

John S. Stokes in a factor analysis of the acne complex, gives the following list of causes:

(1) Hereditary factor — probability twenty-six times greater if there have been previous cases in the family.

(2) Age endocrine factor—including menstrotoxic elements.

(a) Black found acne in 59.6 per cent of the girls between ages of six and 18 years; 68.5 per cent in boys six to 19 years.

(b) Women outnumbered men three to one, possibly a reflection of the greater concern apt to be manifested for the feminine complexion.

(c) The cyclic hydration of tissues just preceding menstruation.

(d) Hypothyroidism.

(e) Sexual emotion and tension an effect through the endocrine mechanism on acne.

(3) Scalp tie-up—genesis of lesions above hair line, contact and distribution of the seborrheic scale.

(4) Hypothesis of double infection—streptococcus, staphylococcus, Corynebacterium, *Staph. aureus*, pityrosporum, dermodex follicularis.

(5) Allergic element—33 per cent of 175 cases. Chocolate and yeast aggravate or produce the lesions.

(6) Contact inoculation factor—autoinoculation due to picking.

(7) Rosacea background—sensitivity of flush areas (easily embarrassed).

(8) Fatigue and exhaustion—tension of work, dates, examinations.

(9) Vitamin factor—Vitamin B_1 beneficial effect on the mobility of the gastrointestinal tract. Vitamin C no effect. Vitamin D 100,000 units daily gave improvement in 25 per cent of cases. Chlorotic girls—vitamin B and iron.

10) Psychoneurogenous component—

(a) Emotional effects on thalamic control of sebaceous secretion.

(b) Vasomotor effects—vagotonic flushing.

(c) Depressive effects of emotion on secretion of hydrochloric acid and through consequent rise in pH on the absorption capacity of the gastrointestinal tract with the induction of the background for rosacea.

TREATMENT

The treatment of acne vulgaris, as in seborrheic conditions, must begin with a general check-up.

(1) *Diet*: High protein, low fat, low carbohydrate diet. Bland with the avoidance of: Chocolote and cocoa; highly seasoned foods; greasy or fried foods, fat meats (pork, ham); starchy foods, cakes, pastries; milk, cream, butter, butter substitutes, cheese; iodized salt.

(2) *Vitamins*: B complex in appropriate cases. Vitamin D high doses (50,000 to 100,000 units per day).

(3) *Glandular therapy*: Thyroid in hypothyroidism, estrogenic substances, according to the case.

(4) *Mechanical*: Expressing comedones in the office. Injecting 10 per cent phenol into deep cysts.

(5) *Physiotherapy*: Ultraviolet light to scalp and face in sub-erythema or erythema doses at weekly intervals.

(6) *X-rays*: 75 to 100 roentgens (¼ erythema doses) to involved area once a week for six to 12 weeks. Other methods should be tried first. Twelve such doses is upper limit of skin tolerance. Record x-ray dosage. Know the amount of x-ray patient has received previously.

(7) *Vaccine*: Mixed influenza, staphylococcus, streptococcus, (commercial) ½ to 1 c. c. once a week hypodermically.

(8) *Local treatment*:

(a) Scalp—see under seborrheic dermatitis.

(b) To involved areas at night: hot compresses of salt or boric acid solution in pustular cases for 15 minutes. Others, wash with hot water and soap and rinse with hot water and apply salve.

Salicylic acid—gr. 15.
Sulphur (ppt.)—gr. 40.
Ung. aquae rosae enough to make 1 ounce
M. et sig.: to involved areas nightly.
Morning, wash thoroughly with hot water and soap, rinse with cold water and apply lotio alba.
Zinc sulphate—½ ounce.
Potassium sulphurette—½ ounce.
Aquae rosae—enough to make 6 ounces.
M. et sig.: apply each day.

(9) *For scarring*: Plastic surgeons should be consulted in severe cases. Individual scars may be removed, relaxed skin tightened by them.

(10) *For acne conglobata*: Tuberculin (bovine or O. T.) injection as brought out by Van Studdiford has been valuable.

(11) *In neurotic excoriation cases*: A psychiatrist should be consulted.

(12) *In bromide or iodide acne*: Increase the sodium chloride intake.

(13) *In keloid acne*: Saturated solution potassium iodide by mouth x to xx drops t.i.d.

PROGNOSIS

Relapses are frequent, and, if they occur, the history of the conduct and the general health of the patient should be thoroughly gone into, especially in regard to cooperation of the patient, diet, intercurrent infections, overwork, worry, alcoholic excesses, constipation, and menstrual flares.

ACNE ROSACEA

Acne rosacea is included in this paper because of its close relationship to acne in general. It is a chronic disorder of the skin occurring on the flush areas of the face. It is characterized by a purplish congestion of these areas with small individual papules surrounded by telangiectasis and surmounted by small pustules. The sequela may be rhinophyma.

(a) Age: After 30. Frequently at or after the menopause.

(b) Hereditary factor is of importance.

(c) Type: (1) Gastrointestinal (low gastric acidity, constipation, "gas on stomach", vague GI complaints); (2) vasomotor instability, low blood pressure (flushing of face in response to extremes in temperature and after ingestion of stimulating foods as alcohol, coffee, tea, hot soups, highly seasoned foods).

(d) Treatment: (1) In general as with acne vulgaris; (2) avoid exposure to extremes in temperature, high winds; (3) diet: (a) same as acne vulgaris with stress on blandness of diet. Avoidance of alcohol, coffee, tea, hot liquids, highly seasoned foods, pastries; (b) dilute hydrochloric acid, 20 minims with meals; (c) electro-desiccation of telangectatic area; (d) local treatment: mild ammoniated mercury or sulphur salve, soothing and protective lotions, scalp treatment as in seborrhea.

SUMMARY

In treating acne and seborrhea, I have tried to give emphasis to the importance of being thorough in the study of the patient as a whole. Acne is by no means easily conquered and its treatment requires persistency and good cooperation between doctor and patient.

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MEDICO-MARTIAL NOTES

The situation in Europe at the time of writing this seems to be most depressing. One of the nations which the United States is tacitly backing is retreating with a rapidity which is most disheartening. In this country the flow of matériel from factories seems to be held up here, there and everywhere by repeated strikes. The cost of living is going up by leaps and bounds and inflation seems to be almost around the corner. Altogether the picture has a decidedly bluish tint for those who believe that totalitarianism is a pernicious and contemptible form of government.

In the State of Louisiana war activity has been most embracing, not only are there shipyards, shell filling plants, cantonments, but also other forms of military energy are engaging the time and effort of innumerable soldiers and citizens.

The people of Louisiana have had the opportunity of seeing many of the hundreds of thousands of troops that came into their territory and those who live in the western part of the state have had a vast multitude of soldiers descend upon them during the course of maneuvers which terminated the first of October. These were the largest maneuvers ever held in this country and the largest that will take place this year. The soldiers had the misfortune of meeting bad weather the greater part of the time but in spite of this their health record was excellent. Only one-third of the expected and anticipated sickness developed in the half million troops in the State of Louisiana. The death rate from accidents was small, the morbidity rate was markedly reduced and were it not for the increasing incidence of venereal diseases, the health situation was and is extremely satisfactory. It must be said with approbation that the Army Medical Corps and the Public Health Services of the local, state and Federal Government did a splendid job in western Louisiana during the summer months when so many troops were quartered in that area.

The problem of what to do with the young men who are rejected by the examining physicians of the draft board because of some physical or mental disability, is agitating thinkers throughout the country. The President has proposed a plan to rehabilitate these young men, almost a million in number, who failed to pass the draft examination. Of this group approximately 200,000 have remedial defects, for the most part oral or ocular. Most of the remainder do not have physical faults which can be immediately remedied.

The result of these examinations indicates a most deplorable state of affairs in

this country. It is true that many of the conditions are of minor importance but sufficient to disqualify a man for Army service. On the other hand, there are enough rejectees to show that there is something wrong with the care of the young adult and the prevention of serious physical disability. A child gets a physical examination in school but often the examination is woefully inadequate and incomplete. As a matter of fact in a large number of schools the examining physician is not permitted to examine the bare chest. After school, further examinations are not made. It has been suggested that there should be compulsory physical examinations for all young people. This is a suggestion which has been advocated for years by members of the medical profession, a routine yearly physical examination of the whole body and a thorough physical check-up. Whether or not such examinations would detect most of the disabilities in their incipiency is a question. Certainly a very large number of young men who are now found physically inadequate could have had remedial measures applied which would have prevented the disability, or, if it had already developed, rectified it.

The correction of the physical defects and the rehabilitation of those who have such faults presents a tremendous problem and it is a problem which is very much more economic and educational than it is a health measure. There are sufficient doctors, hospitals and institutions to take care of these men and to restore them to full physical well-being but they have to be taught to go to the doctor and arrangements have to be made to take care of the expenses that necessarily will arise in the innumerable and varied problems presented by illness.

VASCULAR SURGERY

Under the above caption there appeared on page 93 of the British Medical Journal for July 19, 1941, an editorial which paid honor to our great New Orleans surgeon, Dr. Rudolph Matas. The British Medical Journal is not prodigal in its praise. The Journal is reprinting this editorial below in its entirety, not only because it indicates the world-wide appreciation of Dr. Matas, but also because the contributions referred to in the editorial are part of the surgical history of Louisiana and of the institutions from which the work emanated. The medical profession of Louisiana has a vicarious pride in the work of Dr. Matas. We here feel that praise of him reflects glory upon us as well. The editorial reads as follows:

"The name of Dr. Rudolph Matas is an honoured one in the field of international surgery and of outstanding importance in the sphere of vascular surgery. It is all the more honoured since he started his internship at the Charity Hospital, New Orleans, in the year 1877, at the dawn of the Listerian era, and he is still contributing to the subject he has made so much his own. The unsettled conditions which prevailed in the State of Louisiana during the early part of last century provided surgeons with opportunities for treating many wounds of the peripheral blood vessels and their sequelae. Thus the surgeon's traditional interest in this field was maintained and continued at a time when abdominal and other branches of surgery were claiming more and more adherents. It is worth remembering that in the past the surgeons who achieved the greatest international fame were those who had won their reputations largely through their own work in the surgery of the blood vessels. Matas's early training and experience were thus in a school where the surgery of vascular lesions was a day-to-day problem. In 1888 he carried out the first endo-aneurysmorrhaphy for the treatment of aneurysm and reported the case in the same year. The *Annals of Surgery* for November, 1940, which is a symposium on aneurysms and vascular surgery, contains a review by Matas of a personal series of 620 operations performed upon the blood vessels for all causes between the years 1888 and 1940, a further article from him on aneurysm of the abdominal aorta at its bifurcation into the common iliac arteries, and contributions from other workers on various aspects of vascular surgery and the treatment of

aneurysms. Of Matas's total of 620 operations, 147 were on the common carotid or its branches and 203 at other sites, while 260 were for aneurysm and 360 for other conditions. The different anatomical sites and the operative and technical details are analyzed and classified. Suture methods were employed in 101 cases, and ligation, including aluminium bands, in 519. There were only thirty deaths in the series, or a mortality of 4.83 per cent. This detailed record, which concludes with a list of 108 contributions by Matas to the literature of vascular surgery, is a monument to his wide clinical interests, technical skill, and critical and scientific outlook. His work has served and should still serve as an inspiration and encouragement to younger men the world over."

THE SURGICAL TREATMENT OF VARICOSE VEINS

One of the commonest minor disabling disorders which the female notably, and the male to a somewhat lesser extent, is prone to develop, is varicose veins of the legs. It is said that three per cent of all patients admitted to hospitals have varicosities of the extremities. These varicosities decrease the efficiency of the individual who is engaged in active work. They often produce discomfort and pain which is sufficiently aggravating to make the patient become a neurotic, and sometimes they prepare the field for chronic leg ulcers which are unsightly and annoying in many ways.

Greenwood and Strange* discuss briefly the active treatment of varicose veins of the lower extremity. They point out that there are certain indications and contraindications to active treatment and they review briefly the operative procedures that were popular recently and those which are popular at the present time. The vein-stripping operation of Mayo has ceased to be one of the methods that are employed, although at one time very popular, because of the high mortality that resulted from emboli. The injection of sclerosing agents into the veins has proved disappointing. Reports from various clinics show recurrence in 60 to 100 per cent in one to two years, due to recolonization of the vein, so that the method is of value for temporary relief only. At the present time these authors are employing a combination of high saphenous ligation plus retrograde injection with occasional supplementary segmental injection. This method of treatment is the one now suggested and used by surgeons who are interested in vascular surgery.

The details of the technic of operation are not germane. Suffice it to say that after the isolation of the long saphenous veins all the branches are ligated and then the sclerosing solution of 3.5 per cent sodium ricinoleate is injected. In about two weeks the patient who has not been completely bedridden is encouraged to walk if there is complete thrombosis of the veins. Recurrence after this active form of treatment is reduced as much as 80 per cent, according to the reports from various clinics.

There are certain contraindications to this active form of treatment. They include such factors as advanced age or senility, pregnancy, closure of deep veins by previous thrombosis, presence of certain severe diseases such as diabetes, heart disease, pulmonary disease, metastatic carcinoma; severe peripheral arterial vascular disease, in which the arterial side of the circulatory mechanism is severely involved by arteriosclerosis; the presence of an active phlebitis, although this contraindication is questionable, and lastly tumors of the pelvis or mechanical obstruction of the ileum. In addition to these complications it is advisable always to carry out certain tests in order to determine if the operative procedure is indicated and to determine the severity of the varicose condition of the veins.

In the preoperative examination of the patient, the patency of the deep veins is determined by relatively simple procedures, consisting of elevating the leg, bandaging with elastic bandage from the toes to the

*Greenwood, E. N., and Strange, V. M.: Practical application of recent concepts in active treatment of varicose veins of lower extremities, Pacific Coast Medicine, 9:12, 1941.

groin, and allowing the patient to walk. If the deep veins are obstructed there will be severe pain in the extremity. He is therefore not a subject for ligation of the saphenous vein and retrograde injection. The competency of the saphenous-femoral valve is then noted. Pressure is made over the fossa ovalis with the fingers, the leg is elevated when the patient is on his back and effort is made to milk the extremity of stagnant blood. Pressure is then made over the sapheno-femoral opening with the finger when the patient stands up. The pressure is then released from the fossa ovalis and if there is rapid filling from above down the sapheno-femoral valve is incompetent. With these two simple tests it is possible to determine advisability of operation and how extensive the operation should be.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

MERCY HOSPITAL
New Orleans

The regular monthly staff meeting of Mercy Hospital was held October 1, 1941, with Dr. T. F. Kirn presiding.

Dr. Hanckes presented a very interesting case of atresia of the esophagus with an opening into the tracheal tree, occurring in a female child who at birth weighed 5 lbs. 6½ oz. The delivery was normal. Immediately after delivery the child was cyanotic, presenting mucus at the mouth. This mucus was aspirated with little success. On feeding next day formula was regurgitated through the mouth and nose; cyanosis and dilatation of stomach occurred. An intranasal catheter which was introduced, went down only for about 10 cm., meeting resistance there. Barium introduced into the esophagus showed a dilated pouch about this area. Lipiodol introduced under bronchoscopic visualization showed lipiodol in right lung. Three hours later an x-ray film showed lipiodol in stomach.

Under local the stomach was explored; gastrostomy was done and a 14F catheter was introduced into the stomach and duodenum. The child died three hours later. Autopsy proved the preoperative diagnosis.

About 300 such cases have been described, the first being described by McKenzie in 1870. The etiology is an error in embryologic development. The diagnosis is established on: (1) vomiting fluid by nose and mouth; (2) steady flow of saliva and frothy mucus; (3) cyanosis and suffocation; (4) nasal catheter meets an obstruction; (5) distention of stomach with air; (6) dehydration, inanition, fever.

The operative procedure should attempt to prevent aspiration of food into bronchial tree and to feed patient. The specimen, which was very interesting was displayed by Dr. Hauser. The case was discussed principally by Drs. J. J. Irwin, Hauser, and DeBakey. Dr. Hanckes closed the discussion.

The deaths were then discussed, followed by mortality investigation. Dr. Treadway brought out in synopsis form two interesting cases: one patient with peptic ulcer of 13 hours' duration who died of peritonitis; another patient with partial obstruction which went into complete obstruction, was operated on and died four days later, the tube becoming obstructed with feces.

Meeting adjourned at 9:35 p. m.; members of staff were served refreshments in the cafeteria.

N. J. Tessitore, M. D., Sec.

TULANE MEDICAL SCHOOL
MEDICAL STAFF
New Orleans

The first fall meeting of the Medical Staff of the School of Medicine was held in the Auditorium of the Hutchinson Memorial on Wednesday, October 8. After a business meeting two scientific presentations were made. The first paper was "Recent Studies on the Toxicology of Paraldehyde" by Mr. P. W. Hitchcock of the Department of Pharmocology. The second paper, "Weil's Disease," was presented by Dr. F. E. Bruno of the Department of Medicine. Some ten or twelve members of the staff discussed this subject. It was pointed out, amongst other things, that in some respects Weil's disease resembles closely yellow fever. As a matter of fact in 1907 there was a death in the city of a man with extreme jaundice who probably died as result of Weil's disease. At the time it was an open question whether or not he had yellow fever.

TOURO INFIRMARY
New Orleans

The regular monthly meeting of the Medical Staff of Touro was held Wednesday, October 8 at 8 p. m.

The first feature of the program was the usual clinico-pathologic conference conducted by Dr. S. Harvey Colvin. Following this demonstration, Drs. Maud Loeber and Edgar Burns read a paper on "Multiple Neoplasia of Separate Form and Etiology in the Infant Kidney." This was succeeded by a beautiful demonstration of clinical kodachromes presented by Dr. Waldemar R. Metz. The

meeting closed with a moving picture made by the Winthrop Chemical Company entitled "Regional Anesthesia."

SOUTHERN BAPTIST HOSPITAL
New Orleans

The regular monthly meeting of the Clinical Staff was held October 28 in the Staff Room of the Hospital. The following scientific program was presented: "Case of Essential Hypertension" by Dr. George Mayer; "Case of Fungus Infection of the Lung" by Drs. S. J. Rosenthal and L. C. Chamberlain.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

November 3. Board of Directors, Orleans Parish Medical Society, 8 p. m.

November 4. Eye, Ear, Nose and Throat Staff, 8 p. m.

November 5. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Hutchinson Memorial Clinic Staff, 8 p. m.
Mercy Hospital Staff, 8 p. m.

November 6. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

November 10. Orleans Parish Medical Society, Scientific Meeting, 8 p. m.

November 11. Eye, Ear, Nose and Throat Society, 8 p. m.

November 12. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Touro Infirmary Staff, 8 p. m.
Woman's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

November 17. Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

November 18. Charity Hospital Medical Staff, 8 p. m.

November 19. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.
The New Orleans Tuberculosis Hospital Staff, 8 p. m.

November 20. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

November 21. I. C. R. R. Hospital Staff, 12 noon.
New Orleans Dispensary for Women and Children Staff, 8 p. m.

November 22. Special Meeting, Orleans Parish Medical Society—The Salmon Committee on Psychiatry and Mental Hygiene, McAllister Auditorium, 8 p. m.

November 25. Baptist Hospital Staff, 8 p. m.

November 26. Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
French Hospital Staff, 8 p. m.

November 27. Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

November 28. L. S. U. Faculty Club, 8 p. m.

During the month of October the Society held one regular scientific meeting. The program was as follows:

1. Behind the Scenes with the Community Chest—Motion Picture.
2. Sympathetic Nerve Block in Rehabilitation of the Injured Extremity, Report of Case—by Dr. Howard Mahorner.
3. Peritoneoscopy—by Drs. D. N. Silverman and Robert Katz.
4. A Report on Recently Observed Cases of Weil's Disease—by Drs. Carl J. Wilen, R. B. Snavely, and F. E. Bruno.

NEWS ITEMS

Dr. Elizabeth Bass, founder of the local branch of the American Medical Women's Association, was recently honored by this group with a banquet. Dr. Bass was presented with a hand printed book containing the history of the local branch of this organization.

Dr. Frederick F. Boyce presented a paper on the "Hepatic (Hepatorenal) Factor in Burns" at the annual assembly of the Piedmont Postgraduate Clinical Society, Anderson, S. C., September 9-11.

Dr. Val Fuchs was recently appointed Director of the Emergency Medical Service of Civilian Defense in New Orleans.

Dr. Walter Otis was recently elected chairman of the staff of the DePaul Sanitarium; Dr. Edmund Connely was elected vice-chairman, and Dr. Louis J. Dubos, secretary-treasurer.

Drs. John F. Oakley and E. Garland Walls read papers at the first fall meeting of the Baptist

Hospital Clinical Staff, September 23. Dr. Oakley presented a case report on "Osteoma of Pelvis Complicating Pregnancy," and Dr. Wells spoke on "Adenocarcinoma of the Mouth at the Base of the Tongue."

Dr. Edwin L. Zander was elected chairman of the Surgical Staff of Charity Hospital at a meeting of the staff on September 17. Dr. Henry G. Butker was elected vice-chairman and Dr. Eugene H. Countiss, secretary.

Dr. H. R. Unsworth recently attended the meeting of the Southern Psychiatric Society at Nashville, and the International Medical Assembly in Minneapolis.

TREASURER'S REPORT

Bank Balance, August 31, 1941	$5,721.02
September Credits	500.84
Total Credits	$6,221.86
September Expenditures	655.46
Actual Book Balance, September 30, 1941	$5,566.40

Edwin L. Zander, Secretary

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

MATAS RECEIVES TIMES PICAYUNE CUP

On Saturday, October 25, the Times-Picayune Cup for 1941 was presented by Mr. Nicholson to the country's most distinguished surgeon and New Orleans' best known citizen, Dr. Rudolph Matas. The presentation of the Cup for distinguished service to the community was held in the auditorium of the Hutchinson Memorial before a large gathering. In his speech of acceptance, Dr. Matas spoke with his usual felicity and charm.

TANGIPAHOA PARISH MEDICAL SOCIETY

The regular monthly meeting of the Tangipahoa Parish Medical Society was held at the Casa de Fresa Hotel in Hammond on October 9.

The following papers were presented: "The Treatment of Burns" by Dr. O'Neal, of New Orleans, and "Head Injuries" by Dr. C. B. Odom, also of New Orleans. Mr. Stewart, head of the Farm Security Administration of Tangipahoa Parish, was present to give the doctors information about this group.

S. J. Cali, M. D., Sec.

SOUTHERN MEDICAL ASSOCIATION

The annual meeting, as previously announced, will be held this year in St. Louis, November 10-13. The many Southern physicians who look forward yearly to this convocation of science and pleasure will have spread before them as usual an excellent formal program, as well as many social events.

There will be a large scientific exhibit and what ought to be very interesting, a hobby exhibit. Many motion pictures also will be shown.

The professional program includes papers not only by Southern physicians but also by invited guests, probably the most notable of whom is Dr. Frank H. Lahey, President of the American Medical Association. Following the general clinical sessions on Monday and Tuesday, will come the section meetings. In these section meetings, the physicians of Louisiana are well represented. Appearing on the program reading papers will be Drs. Chester A. Stewart, Charles Barrett Kennedy, with James K. Howles and Medd Hennington, Vincent J. Derbes, Frederick F. Boyce, Guy Caldwell and Frank J. Cox, Peter Graffagnino and Richard T. Stephenson, and Joseph W. Reddoch.

Organizations meeting simultaneously with the Southern Medical include the American Public Health Association, the Southern Branch under the presidency of Dr. Felix Underwood, the National Malaria Committee of which Dr. J. N. Baker is chairman, and the American Society of Tropical Medicine, whose president is Thomas J. Mackie of New York. Meeting conjointly with the American Society of Tropical Medicine will be the American Academy of Tropical Medicine.

In addition to Dr. Lahey, Dr. James S. McLester will speak on "Nutrition in War Time" and Mr. Edward A. Tamm, of the Federal Bureau of Investigation, will speak on "Espionage in the United States." Dr. Paul H. Ringer will deliver the President's Address at the general session meet-

ing on Tuesday, November 11. What Dr. Ringer has to say is always worth hearing.

For the ladies a tremendously interesting and long program has been provided. They will be entertained from 10 in the morning until 10 at night with all kinds and variety of interesting entertainment.

COMMUNITY CHEST—LYONS HEADS PHYSICIANS

Dr. Shirley C. Lyons, Vice-president of the Orleans Parish Medical Society, is chairman this year of the Physicians and Surgeons Branch of the Doctors' Division of the Community Chest. He succeeds Dr. Warren Rosen who was last year's Chairman. The captains of the Doctors' Division are the following well known New Orleans physicians: Drs. Harold A. Bloom, C. L. Brown, O. P. Daly, J. C. Dubret, Homer Dupuy, E. A. Fatter, J. B. Gray, R. P. Hays, J. K. Howles, M. Lescale, J. M. Lyons, Mercer Lynch, J. G. Menville, D. J. Murphy, Neal Owens, J. R. Schenken and C. S. Wood.

POSTGRADUATE COURSES

An intensive course in ophthalmology will be held at George Washington University School of Medicine, Washington, D. C., February 2-4, 1942. Succeeding this will be a course in aviation ophthalmology and aviation medicine on February 5-7.

A course limited to thirty physicians will be given in ocular surgery, pathology, and orthoptics, January 26-31. Distinguished guest lecturers from Boston, Rochester, Chicago, Philadelphia, New York, St. Louis and other cities have been selected to take part in the course.

AMERICAN COLLEGE OF SURGEONS

The annual meeting of the Fellows of the American College of Surgeons will be called to order on Thursday afternoon, November 6, in the Ballroom of the Copley Plaza Hotel, Boston, according to the notice sent out by Dr. Irvin Abell, Chairman of the Board of Regents.

THE SALMON LECTURES

The Salmon Memorial Lectures will be delivered throughout the country by Dr. Robert D. Gillespie, psychiatric specialist of the British Royal Air Force. Dr. Gillespie has received special leave of absence to deliver these lectures in this country and Canada.

Of Doctor Gillespie it can be said that he is one of the outstanding psychiatrists in England. He served, however, for several years as a member of the faculty of Johns Hopkins University, Baltimore. He has written several books and contributed extensively to medical literature. His observations made under war conditions should be of interest to American psychiatrists in formulating plans for maintaining civilian morale in wartime. He will discuss the problems of psychiatry of national defense under the title "Psychoneuroses in Peace and War and the Future of Human Relationships."

The Salmon Lectures in New Orlans will be held on November 22 sponsored by the Louisiana State University School of Medicine, Southern Psychiatric Association, New Orleans Society for Neurology and Psychiatry, Louisiana State Medical Society, and Orleans Parish Medical Society.

NEWS ITEMS

Dr. Nathan H. Polmer presided at the twentieth annual convention of the American Congress of Physical Therapy in Washington, D. C., September 1-5, 1941. Dr. Polmer also participated in an instruction seminar and spoke on "The Physiologic Effects of Heat."

It has been announced that the Rockefeller Foundation has made a liberal grant to finance a three-year study of health agencies in the United States.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The thirteenth annual meeting of this organization convened at the Roosevelt Hotel, October 2-4, with Dr. H. B. Alsobrook acting as general chairman. A splendid program was put on by the local obstetricians and gynecologists, plus a small group of distinguished out-of-town specialists. The attendance was large, about 400 doctors registering from some 28 states.

Chairmen of the local committees were: Ladies, Dr. E. P. McCormick; Hotel, Dr. J. F. Dicks; Finance, Dr. L. A. LeDoux; Hall, Dr. W. E. Levy; Clinic, Dr. Peter Graffagnino; Banquet, Drs. J. W. Reddoch and E. R. Guidry; Entertainment, Dr. W. R. Hardy; Golf, Dr. Harry Meyer; Lantern, Dr. R. E. Arnell; Luncheon, Dr. F. K. Vaughan; Publicity, Dr. E. L. Zander; Registration, Dr. E. C. Smith; Signs, Dr. E. H. Countiss; Transportation, Dr. H. C. Magee; Radio, Dr. George Mayer. Members of the Advisory Committee were Drs. Adolph Jacobs, H. W. Kostmayer, M. E. Lapham, W. D. Phillips, T. B. Sellers, P. T. Talbot, B. I. Burns, H. E. Miller, A. H. Gladden, Jr., Harold Cummins, and J. S. Hebert.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Section of Epidemiology of the Louisiana State Board of Health showed that for the week ending September 20, the thirty-eighth week of the year, there were 338 cases of syphilis reported. Other diseases in numbers greater than ten included 44 cases of gonorrhea, 26 of influenza, 25 each of malaria, pulmonary tuberculosis, and typhoid fever, 24 of food poisoning, 21 of cancer, and 13 of pneumonia. The large

number of typhoid fever cases reported this week for the most part was confined to Avoyelles Parish, there being 13 cases listed from this particular state division. There were two cases of poliomyelitis listed, one from Bossier and one from Jefferson Davis. Five cases of typhus fever were reported, including two each from Orleans and Avoyelles and one from East Carroll. The food poisoning cases, 24 in number, had their origin in army hospitals. For the following week there were 250 cases of syphilis, followed in order of frequency by 32 of gonorrhea, 18 of pneumonia, 16 each of pulmonary tuberculosis and cancer, 15 of malaria, and 12 of influenza. Four cases of poliomyelitis arose, one each in St. Landry and Caddo and two in Jackson. Five cases of typhus fever were scattered throughout the state, no one parish reporting more than one instance. The typhoid fever incidence had fallen to only three cases this week. It is interesting to note that of the reportable diseases the following were from army hospitals: 12 cases of influenza, six of malaria, four of pneumonia, and one of diphtheria. For the week which terminated October 4, there were listed in numbers greater than ten: 238 cases of syphilis, 51 of gonorrhea, 39 of influenza, 24 of malaria, 20 of pulmonary tuberculosis, 18 of pneumonia, 12 of cancer, and 11 of scarlet fever. One case of poliomyelitis had its origin in Ouachita. Of the six cases of typhus fever, two each were found in Orleans and Beauregard, and one each in Iberia and Lincoln. Army hospitals, amongst other diseases, reported 38 of the 39 cases of influenza, and 22 of malaria. For the week which ended October 11 there were 330 cases of syphilis, 30 of gonorrhea, 22 of pulmonary tuberculosis, 14 each of typhoid fever and cancer, 12 of pneumonia, 11 of typhus fever, and 10 each of diphtheria and malaria. Parishes having more than two cases of typhoid fever were Natchitoches, St. Mary and West Carroll, with three each. There were seven cases of poliomyelitis, two among delayed reports, and no parish having more than two cases with the exception of Orleans. Of the large number of typhus fever cases, six were given as occurring in Orleans Parish, although it is quite likely that some of these cases arose in parishes surrounding the city and were imported into Charity Hospital.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, has reported that for the week ending September 13, there were 155 deaths in the City of New Orleans, distributed 90 white and 65 negro, with 22 being in children under one year of age, of whom four were white and eight colored. For the week which terminated September 20, there was a slight reduction in the number of deaths, these falling to 136, 71 white and 65 negro; infant deaths were 20 in number, eight white and 12 negro. The week closing September 27 showed a still further reduction in the city deaths, 10 less than the previous week being reported, of whom 68 were white and 58 negro. A still further reduction occurred in the infant mortality, only 14 children expiring in this week, four of whom were in the white and 10 in the negro race. The first week in October, which ended on the fourth, showed figures which were virtually unchanged except that of the additional deaths in the city there was an increase in the white and a diminution in the negro rate. In so far as adult and children rates, the adult deaths in the white race were 77 in number, plus 10 infants; in the negro, 52, plus five baby deaths.

FORGER WANTED

In Re: Marvin Levinsohn, Alias Martin Davis. Passer of Counterfeit Checks Drawn on the "Quartermaster Bank of the United States Army".

Superintendents of Hospitals:

This man is in an advanced stage of tuberculosis, has been receiving pneumothorax treatments, and is also suffering from gastric ulcers, according to his mother. The latter claims her son had been treated by some physician in Peek's Island, Maine, and believes he will appear at some hospital in the near future, as he will require further treatment. Levinsohn recently absconded with about $600.00 of his mother's funds.

Marvin Levinsohn, alias Martin Davis, victimized a Philadelphia physician September 26 with a $14 check and received $9 in change, the doctor's fee being $5 for a pneumothorax treatment. The doctor said Levinsohn is in absolute need of such treatments at least once every three weeks. Levinsohn also defrauded a physician in New York City on the night of September 23, calling at 8:30 o'clock and complaining of great pain. After fluoroscoping his patient and giving him two hypodermics, the doctor directed him to call at the District Health Center for further treatment and possible hospitalization, his examination showing an artificial pneumothorax of the right side. For his services, the doctor accepted Levinsohn's check for $14 and gave him $11 in cash. Levinsohn insisted upon the doctor examining his credentials and warned him to be careful in accepting Army checks, pointing out that he should always request identification and compare the number on the check with the number of the identification card. Levinsohn endorsed the check in the doctor's presence. This man has also passed some of these counterfeit checks on rooming house proprietors and merchants.

Should Marvin Levinsohn call for pneumothorax treatments, kindly detain him under some pretext and notify your local Police Department at

once, who will take him into custody and notify this office.

Harry D. Anheier,
Agent-in-Charge, Secret Service Division, Treasury Department, New Orleans.

CIVILIAN DEFENSE

According to a joint statement issued on September 4 by the U. S. Director of the Office of Civilian Defense, F. H. LaGuardia, and the Chairman of the American National Red Cross, Norman H. Davis, State and local defense councils are the official agencies responsible for the coordination of all available resources which may be required for civilian protection in the event of belligerent action. Defense Councils should therefore acquaint themselves with the resources of the local Red Cross Chapters in providing food, clothing, shelter, nursing care, transportation, and other basic necessities and should integrate them into the comprehensive local program. Duplication of trained and experienced personnel and of available supplies of the Red Cross should be avoided except where supplementation is essential to meet the anticipated needs of the community.

George Baehr, M. D.,
Chief Medical Officer.

HOSPITAL BED FACILITIES

The most widespread survey ever made of hospital bed facilities in the United States, released today by the Census Bureau of the Department of Commerce, reveals that 1,282,785 beds were available in 9,614 institutions for the medical care of the American people in 1939.

The country's 6,991 hospitals and sanatoriums provided the great bulk of this care—355,145,063 patient-days, or the equivalent of one week-end stay in a hospital each year for every person in the United States. Infirmaries and nursing, convalescent, and rest homes provided the remainder.

Hospitals and sanatoriums had 1,186,262 beds—92 per cent of the nation's total. Census Bureau figures show that the average hospital had 169 beds and served 5,000 families.

Hospital facilities for the country, however, were well below the "minimum requirements for adequate medical service" set up in 1933 by the Committee on the Costs of Medical Care. Here's how the number of hospital beds per 10,000 population compares:

	Beds Available	Beds Needed
General	38	46
Tuberculosis	6	14
Mental	46	56
Total	90	116

To meet this minimum of 116 beds per 10,000 population, the United States would have to build 2,000 more average-size, 170-bed hospitals.

Even counting in all the beds available in infirmaries and nursing, convalescent, and rest homes, the Census figures show that 26 states had inadequate hospital facilities—fewer than 100 beds per 10,000 population. Eighteen states had between 100 and 124 beds—approximately adequate facilities. Massachusetts, New York, Colorado, Maryland, and the District of Columbia had good facilities—more than 124 beds per 10,000 population.

New York state alone had 192,345 medical-care beds, or more than one-seventh of the nation's total.

In 1939, general hospitals were operating at 70 per cent of capacity, tuberculosis hospitals at 85 per cent, and mental hospitals at 95 per cent. The Census Bureau noted that many mental hospitals are overcrowded, due to rapidly increasing hospitalization for this type of illness.

Although only 594 hospitals—less than one in ten—were for nervous and mental patients, they had 602,850 beds or more than one-half of the total for all types of patient. They gave 208,466,000 patient-days of care.

The 5,912 general hospitals gave 122,467,000 patient-days of care, and the 485 tuberculosis hospitals 24,212,000 patient-days.

Approximately 77 per cent of the care rendered in 1939 was in state, local and federal government-controlled hospitals, 20 per cent in non-profit institutions and 3 per cent in proprietary institutions, the Census Bureau noted. The large proportion of care financed by taxes is due to government tuberculosis sanatoriums and government hospitals for mental patients.

MEDICAL-CARE BEDS IN THE UNITED STATES

	Total number of beds	Beds per 10,000 population
Good Facilities		
Dist. of Columbia	12,858	194
Massachusetts	66,205	153
New York	192,345	143
Colorado	15,427	137
Maryland	22,836	125
Adequate Facilities		
California	85,365	124
New Hampshire	6,028	123
Vermont	4,387	122
Rhode Island	8,659	121
Washington	20,780	120
Connecticut	20,257	119
Delaware	3,133	118
Wyoming	2,903	116
Minnesota	31,897	114
New Jersey	47,494	114
Oregon	12,238	112
Wisconsin	35,174	112

Montana	6,169	110
Nevada	1,216	110
Illinois	84,871	108
Michigan	55,844	106
Arizona	5,242	105
North Dakota	6,470	101
Inadequate Facilities		
Maine	8,282	98
Pennsylvania	93,756	95
Iowa	23,475	93
South Dakota	5,772	90
Missouri	33,850	89
Kansas	16,070	89
Nebraska	11,506	87
Ohio	59,823	87
Indiana	29,449	86
Virginia	22,929	86
New Mexico	4,363	82
Louisiana	18,357	78
Utah	3,988	73
Oklahoma	16,858	72
Idaho	3,748	71
Florida	13,372	71
Kentucky	18,795	66
Texas	38,821	61
West Virginia	11,477	60
North Carolina	20,711	58
Tennessee	16,514	57
Arkansas	10,946	56
South Carolina	10,670	56
Georgia	17,222	55
Alabama	14,547	51
Mississippi	9,686	44
U. S. total	1,282,785	97

WOMAN'S AUXILIARY
Louisiana State Medical Society

OFFICERS

President—Mrs. Aynaud Hebert, New Orleans.

President elect—Mrs. Clarence B. Erickson, Shreveport.

First Vice-president—Mrs. H. O. Barker, Alexandria.

Second Vice-president—Mrs. Cecil O. Lorio, Baton Rouge.

Third Vice-president—Mrs. B. L. Cook, Minden.

Fourth Vice-president—Mrs. R. W. O'Donnell, Monroe.

Treasurer—Mrs. Daniel J. Murphy, New Orleans.

Recording Secretary—Mrs. Rhodes Spedale, Plaquemine.

Corresponding Secretary—Mrs. Charles R. Hume, New Orleans.

PARISH PRESIDENTS FOR 1941-42

Acadia—Mrs. J. P. Mauboules, Rayne.

Ascension—Mrs. D. T. Martin, Donaldsonville.

Beauregard—Mrs. John Frazar, DeRidder.

Caddo—Mrs. W. R. Harwell, Shreveport.

Calcasieu—Mrs. J. Y. Garber, Lake Charles.

East Baton Rouge—Mrs. John L. Beven, Baton Rouge.

Iberia—Mrs. Henry Dauterive, New Iberia.

Iberville—Mrs. E. C. Melton, Plaquemine.

Jefferson Davis—Mrs. John G. McClure, Welsh.

Lafayette—Mrs. William Melancon, Carencro.

Lafourche—Mrs. Guy Jones, Lockport.

Natchitoches—Mrs. W. W. Knipmeyer, Natchitoches.

Orleans—Mrs. James W. Warren, New Orleans.

Ouachita—Mrs. DeWitt T. Milam, Monroe.

Rapides—Mrs. D. B. Barber, Pineville.

Second District—Mrs. P. P. LaBruyere, Marrero.

St. Landry—Mrs. Ladislas Lazaro, Jr., Opelousas.

St. Mary—Mrs. T. E. Dreher, Morgan City.

St. Tammany—Mrs. J. K. Griffith, Slidell.

Tangipahoa—Mrs. V. J. Gautreau, Hammond.

Terrebonne—Mrs. T. I. St. Martin, Houma.

Vermilion—Mrs. C. J. Mouton, Maurice.

Washington—Mrs. W. S. Harrell, Bogalusa.

Webster—Mrs. T. A. Richardson, Minden.

OUACHITA PARISH NEWS

President—Mrs. D. T. Milam.

First Vice-president—Mrs. J. E. Walsworth.

Second Vice-president—Mrs. F. C. Bennett.

Treasurer—Mrs. D. M. Moore.

Recording Secretary—Mrs. W. L. Smith.

Corresponding Secretary—Mrs. John Pracher.

Publicity Secretary—Mrs. A. G. McHenry.

Historian and Exhibit Chairman—Mrs. J. W. Cummins.

Parliamentarian—Mrs. A. D. Tisdale.

The Women's Auxiliary to the Ouachita Parish Medical Society met at a luncheon meeting Tuesday, September 9, at the Lotus Club, Monroe. The new president, Mrs. D. T. Milam, presided at the meeting.

Luncheon was served in one of the dining rooms. Dr. H. S. Coon, President of Ouachita Parish Medical Society, was guest speaker and gave a talk on new trends in medicine. Dr. Coon complimented the club on the well planned program which has been outlined for 1941-42.

ORLEANS PARISH

President—Mrs. James W. Warren.

President-elect—Mrs. Paul G. Lacroix.

Past President—Mrs. Aynaud F. Hebert.

First Vice-president—Mrs. Ansel M. Caine.

Second Vice-president—Mrs. Daniel J. Murphy.

Third Vice-president—Mrs. A. L. Levin.

Fourth Vice-president—Mrs. Edgar Burns.

Recording Secretary—Mrs. Tracy Gately.

Treasurer—Mrs. Monte Meyer.

Corresponding Secretary—Mrs. E. B. Vickery.

Parliamentarian—Mrs. Joseph LaNasa.

Historian—Mrs. Waldemar R. Metz.

Publicity—Mrs. Frederick L. Fenno.

As a contribution to the National Defense Program, the Woman's Auxiliary to the Orleans Parish Medical Society has appropriated a sum of money to be used for the benefit of patients in the La-Garde General Hospital in New Orleans. Subscriptions to magazines, games and tables are being purchased for the use of the patients. In order that we might be certain of getting periodicals and games that are really desired by the boys, the superintendent of the hospital and the head of the social service department were contacted and the lists furnished by them will be used in making purchases.

SOUTHERN MEDICAL ASSOCIATION

The Southern Medical Association Auxiliary will hold its annual meeting November 10-13 with headquarters at St. Louis, Missouri. Your president extends this invitation to all members of Louisiana State Auxiliary and hopes many of you will avail yourselves of the privilege.

I would appreciate having news of parish auxiliaries for the journal, so that all auxiliaries may benefit from their diversified programs.

Respectfully submitted,
Mrs. Jules Myron Davidson,
Publicity Chairman.

BOOK REVIEWS

The 1940 *Year Book of Public Health:* Edited by J. C. Geiger, M. D., Dr. P. H. Chicago, The Year Book Publishers, 1940. Pp. 560. Price $3.00.

This, the first of a promised series of year books on public health, compares favorably with similar compilations, as the year books on general medicine and pediatrics, produced by the same publishers.

From the great number of public health articles appearing between February, 1939, and August, 1940, 421 of those most pertinent to present day interests appear in abstract form to create the body of the book. Over half of these abstracts are followed by good editorial comment. Author and source are given for each article.

While all fields of public health interests are included, greatest space is taken by communicable diseases and epidemiology, child hygiene and administration. Numerous diagrams, charts, and tables are included. A double system of indexing (subject material and author) facilitates use of the book. Binding and type of print are similar to those of the other year books of the series.

For those having need of frequent references to material in several fields of public health interest, this manual should be of especial value. Also, a year-after-year file of these books should serve as a reliable cumulative reference file.

RALPH H. HEEREN, M. D.

Strange Malady, a Story of Allergy: By Warren T. Vaughan, M. D. New York, Doubleday, Doran & Co., 1941. Pp. 268; illus. Price $3.00.

Using the history of allergy as a yarn, Dr. Vaughan has woven what the scientist knows of clinical allergy into a fabric appreciable to the lay eye. The reader is introduced to the pioneers in immunology, shares their problems, and follows them in their experiments. When the last page is reached, the reader is in a position to understand the nature and management of allergic disease. If he be one of the five per cent of humans afflicted with this "strange malady," he should be a more cooperative patient than when he first turned the flyleaf.

The book is replete with photographs of the early allergists. Illustrative sketches help the reader visualize the more complicated immunologic phenomena. A foreword by Dr. E. R. Long gives the reader a good idea of what to expect in the ensuing pages.

STANLEY COHEN, M. D.

Emergency Surgery: By Hamilton Bailey, F.R.C.S. (Eng.). 4th ed. Baltimore, William Wood, 1940. Pp. 944; illus. pl. Price $15.00.

This textbook is divided into 70 chapters, embracing all systems of the human body, and contains 93 beautiful and clear illustrations, a large number of which are in color. It is worth a space in anyone's medical library.

The text is replete with many valuable hints in various procedures: methods of preoperative preparations and postoperative care; clear details in surgical technic, concerning indications, procedures and postoperative complications requiring prompt attention. The book stands out as vivid evidence of excellent and well-organized labor.

ADOLPH JACOBS, M. D.

A Manual of Allergy: By Milton B. Cohen, M. D. New York, Paul B. Hoeber, Inc., 1941. Pp. 156. Price $2.00.

This is one of several medical primers especially compiled for use by the general practitioner to obtain a fairly accurate picture of the whole field of allergy. While the study of its various chapters may equip the family physician with an intelligent conception of his case and enable him to direct the treatment, it leaves him with the conviction that the field is too wide and intricate for him to do full justice to his allergic client without securing the cooperation of a specialist.

The subject is gracefully and simply offered. The following chapters deserve special study: (1) the one explaining how allergy develops and

progresses in children; (2) another dealing with history taking, and (3) another explaining the values of skiagraph in detecting demineralization caused by food allergy or as is sometimes the case by too strict dieting.

The author rightly condemns the use of opiates in asthma and cites fatal cases where opiates may have played unfavorable part.

The reviewer cannot too strongly emphasize the fact that the manual should only be considered as an introduction to standard books on allergy by those who will seriously assume the responsibility of treating patients with hay fever, asthma or other forms of allergy.

N. F. THIBERGE, M. D.

Plagus on Us: By Geddes Smith. New York, The Commonwealth Fund, 1941. Pp. 365. Price $3.00.

The author of this volume is a member of the staff of the Commonwealth Fund and, though not trained in medicine, has accomplished a notably satisfactory work in popularizing epidemiology by providing readily understandable and accurate accounts of a number of epidemics (typhoid fever, amebic dysentery, and plague). There is in the foreward a disclaimer of any attempt at presenting original material and a special acknowledgment of help received from Drs. Clarence L. Scammon, Benjamin White and Wade H. Frost. Anyone following the guidance of these men could hardly go wrong. The volume consists of prologue, epilogue, and seven chapters of text. In the prologue the present disturbed condition of the world is suggested as a fitting setting for the peril of pestilence.

Dr. Smith makes clear that Pasteur's claim to fame is based on conclusive experimentation where others surmised; and that Koch's great contribution was of technical methods.

There is a discussion of infection and immunity mechanisms that for the average medical reader will be found simpler and decidedly more readily understood than the purely technical presentations of most specialists. The same holds for the discussion of the relation of parasite and host.

The complexities of the problems of malaria control could hardly be better stated even if much more space were given to it. Dramatic accounts of yellow fever in 1878 are given. Residents of New Orleans will be interested in the following from the quarantine officer—clearly forecasting the day when yellow fever would not be regarded as a filth disease (p. 23): "It is disheartening to the enthusiastic sanitarian to drive along the filthy open canal in the center of Melpomene street, and contrast the comparative exemption of that thoroughfare from sickness, with the frightful devastation which occurred in the clean and beautiful residences about the intersections of Euterpe with Carondelet and Baronne streets."

The influenza outbreak of 1918 is dealt with somewhat luridly, though the reviewer could not detect a definite exaggeration or misstatement of fact, and what probably is more important, the author suggests that we are no better prepared to deal with influenza than we were 23 years ago. There is an interesting chapter on past thinking in which the history of the development of the idea of contagion is set forth and in which Fracastor is credited with a less clear perception of infection than usually is accorded him.

There is a particularly sane paragraph on typhoid vaccination which the author rightly designates "a confession of failure in the decencies of sanitation."

In Chapter 7, under detective work, will be found a number of well chosen examples of the procedures required to detect sources and channels of infection.

The book contrasts the death rates of many diseases in times past with the present thus illustrating the progress in public health; it equally frankly sets forth failures as in influenza and the common cold.

The epilogue is given over largely to problems awaiting solution and a sober appraisal of what has been accomplished and what remains.

The physician will find the book a very interesting and helpful summing up of our knowledge in many fields and of our ignorance in others; the teacher of epidemiology will find handily brought together useful material in his special field; the intelligent layman should enjoy it and find little or nothing that will be a severe tax on his understanding.

G. W. McCOY, M. D.

Age Morphology of Primary Tubercles: By Henry C. Sweany, M. D. Springfield, Ill., Charles C. Thomas Co., 1941. Pp. 265. Price $5.00.

This monograph is the outcome of a study revealing the evolution of the tubercle as it occurs in the majority of cases. The nature of the study is best described in the author's words in which he states that "all factors pertaining to the main thesis—the relationship of age to morphology of primary tubercles" must be carefully elucidated and properly evaluated. The author is quick to admit the controversial nature of the subject, the fact that it is to a great extent theoretical and that there is "no claim to a finality." Numerous and excellent illustrations are present throughout the work and help not a little in making more graphic the facts presented in the author's thesis.

The reviewer has no intention of discussing the book in any detail. The presentation is a novel one and an excellent pioneer in a field the importance of which is at once apparent to the phthisiologist, pathologist and roentgenologist. The work is provocative of much thought, stimulating to further endeavor, and most convincing in great part. The author is one of the leaders in this country in the field of pathology of tuberculosis and con-

sequently this work bears the impress of comprehensive erudition.

There is a fine bibliography and index. The format of the book is one to make a reading of the volume a pleasure.

I. L. ROBBINS, M. D.

The Pharmacology of Anesthetic Drugs: By John Adriani, M.D. 2nd ed. Springfield, Ill., Charles C Thomas Co., 1941. Pp. 86. Price $3.50.

This outline of the pharmacology of anesthetic drugs contains a condensed compilation of theories and facts. The author has selected the material carefully and intelligently, and has shown sound judgment and skill in the difficult handling of controversial matter.

The diagrammatic arrangement of the subject matter is intended to help focus the reader's attention. In this reviewer's opinion, however, this goal is not attained. The book contains altogether too many over-simple drawings which cannot be of any help to either student or physician. Effects of anesthetics on urine formation and composition, for instance, are illustrated by a diagram of a partly filled test tube. While the pedagogic value of this sort of text illustration is indisputable when dealing with some types of basic instruction, it seems out of place in a book which is obviously conceived and written for quite an advanced group of readers.

Containing chapters on premedication, analeptics, on complications and clinical accidents in anesthesia, the book is comprehensive. In spite of the minor objection stated above, it is strongly recommended for use in connection with textbooks and original publications.

GERHARD KATZ, M. D.

Proctology for the General Practitioner: By Frederick C. Smith, M.D., M.Sc. (Med.), F.A.P.S. 2nd rev. ed. Philadelphia, F. A. Davis Co., 1941. Pp. 466; illus. Price $4.50.

For the field it proposes to cover, this book succeeds exceedingly well. It is concise but clear in its text, authoritative in its statements, and generous in its quotations. It is amply illustrated with numerous pictures, diagrams, and plates. It is a good book for short, ready reference.

MAURICE LESCALE, M. D.

Dietetics for the Clinician: By Milton A. Bridges, B.S., M.D., F.A.C.P. 4th ed. rev. Philadelphia, Lea and Febiger, 1941. Pp. 960. Price $10.00.

This posthumous fourth edition is proof both of its popularity and worth. It also indicates the growing importance and rapid advances made in the science of nutrition. The section on vitamin factors in the diet has been brought up to date and is a resumé of this live and ever changing topic. Probably one reason for the popularity of this book is the ease with which one many refer to the dietetic management of most of the diseases of adults. While one may differ as to the value of a special diet in a certain morbid state, it is of interest to learn the viewpoint of an authority. The appendix, bibliography and index take up the last 361 pages of the book. A tremendous amount of information is found in this section with easy reference. In summary, I would state that this fourth edition surpasses any of the previous ones in value to the clinician.

RANDOLPH LYONS, M. D.

School Health Services: A Study of the Programs Developed by the Health Department in Six Tennessee Counties: By W. Frank Walker, Dr.P.H., and Carolina R. Randolph. New York, The Commonwealth Fund, 1941. Pp. 172; 104 tables; 12 charts. Price $1.50.

This study concerns the conduct of school health services among some 58,000 Tennessee children. It was carried on over a period of six years in six counties having had full time health departments for five to fifteen years before beginning of the study and was directed jointly by the State Department of Health and the Commonwealth Fund.

Through use of such criteria as (1) extent of correction of physical defects noted; (2) relation of nursing follow-up to number of corrections made; and (3) differences in physical condition between those who have had and have not had pre-school supervision, school health service evaluations are attempted.

This study as an analytic evaluation offers many suggestions toward making school health work effective.

RALPH H. HEEREN, M. D.

PUBLICATIONS RECEIVED

D. Appleton-Century Co., Inc., New York City: Textbook of General Surgery, by Warren H. Cole, M. D., F.A.C.S., and Robert Elman, M. D.

Columbia University Press, New York City: Immunity against Animal Parasites, by James T. Culbertson.

Colwell Publishing Company, Champaign, Illinois: Dr. Colwell's Daily Log for Physicians, 1942.

Grune & Stratton, Inc., New York City: Shock Treatment in Psychiatry: a Manual, by Lucie Jessner, M. D., Ph.D., and V. Gerard Ryan, M. D.

Paul B. Hoeber, Inc., New York City: Diseases of the Thyroid Gland, by Arthur E. Hertzler. M. D.

Johns Hopkins Press, Baltimore: Immunization to Typhoid Fever, from the Research Laboratories of the Army Medical School, Washington, D. C.; The American Journal of Hygiene Monographic Series, No. 17, September, 1941.

Charles C Thomas, Springfield, Illinois: Wounds and Fractures, by H. Winnett Orr, M. D., F.A.C.S. The Essentials of Occupational Diseases, by Jewett V. Reed, B. S., M. D., F.A.C.S., and A. K. Harcourt, B. S., M. D. A Manual of the Treatment of Fractures, by John A. Caldwell, M. D.